SECTION BRC
BRAKE CONTROL SYSTEM

CONTENTS

VDC/TCS/ABS

PRECAUTION 6

PRECAUTIONS 6
Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER" 6
Precaution for Work 6
Precaution for Procedure without Cowl Top Cover 7
Precaution for Brake System 7
Precaution for Brake Control System 7
Precaution for Harness Repair 8

PREPARATION 9

PREPARATION 9
Special Service Tool 9
Commercial Service Tools 9

SYSTEM DESCRIPTION 10

COMPONENT PARTS 10
Component Parts Location 10
ABS Actuator and Electric Unit (Control Unit) 12
Wheel Sensor and Sensor Rotor 13
Steering Angle Sensor 14
Stroke Sensor 15
VDC OFF Switch 15
Brake Fluid Level Switch 15
Brake Pedal Position Switch / Stop Lamp Switch 15
Parking Brake Switch 16

SYSTEM 17
System Description 17
Fail-safe 28

VDC FUNCTION 31
VDC FUNCTION : System Description 31

TCS FUNCTION 34
TCS FUNCTION : System Description 34

ABS FUNCTION 36
ABS FUNCTION : System Description 36

EBD FUNCTION 37
EBD FUNCTION : System Description 37

COOPERATIVE REGENERATIVE BRAKE FUNCTION 39
COOPERATIVE REGENERATIVE BRAKE FUNCTION : System Description 39

BRAKE ASSIST FUNCTION 41
BRAKE ASSIST FUNCTION : System Description 41

BRAKE FORCE DISTRIBUTION FUNCTION 42
BRAKE FORCE DISTRIBUTION FUNCTION : System Description 43

HILL START ASSIST FUNCTION 44
hill start assist FUNCTION : System Description 45

INFORMATION DISPLAY (COMBINATION METER) 46
INFORMATION DISPLAY (COMBINATION METER) : Chassis Control Display 47

WARNING/INDICATOR/CHIME LIST 47
WARNING/INDICATOR/CHIME LIST : Warning Lamp/Indicator Lamp 47

DIAGNOSIS SYSTEM [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)] 49
CONSULT Function 49

ECU DIAGNOSIS INFORMATION 54

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) 54
Reference Value 54
Fail-safe 56
DTC Inspection Priority Chart 60
DTC Index 61

WIRING DIAGRAM 63

BRAKE CONTROL SYSTEM 63
Wiring Diagram 63

BASIC INSPECTION 73

DIAGNOSIS AND REPAIR WORK FLOW 73
Work Flow 73
Diagnostic Work Sheet 74

ADDITIONAL SERVICE WHEN REPLACING ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) 76
Description 76

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION 77
Description 77
Work Procedure 77

CALIBRATION OF DECEL G SENSOR 80
Description 80
Work Procedure 80

STROKE SENSOR 0 POINT LEARNING 82
Description 82
Work Procedure 82

CONFIGURATION [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)] 84
Work Procedure 84

DTC/CIRCUIT DIAGNOSIS 86

C1101, C1102, C1103, C1104 WHEEL SENSOR 86
DTC Description 86
Diagnosis Procedure 87

C1105, C1106, C1107, C1108 WHEEL SENSOR 91
DTC Description 91
Diagnosis Procedure 92

C1109 POWER AND GROUND SYSTEM 99
DTC Description 99
Diagnosis Procedure 100

C1111 ABS MOTOR, MOTOR RELAY SYSTEM 101
DTC Description 101
Diagnosis Procedure 102

C1115 WHEEL SENSOR 104
DTC Description 104
Diagnosis Procedure 105

C1116 STOP LAMP SWITCH 112
DTC Description 112
Diagnosis Procedure 113

C1120, C1122, C1124, C1126 ABS IN VALVE SYSTEM 114
DTC Description 114
Diagnosis Procedure 115

C1121, C1123, C1125, C1127 ABS OUT VALVE SYSTEM 116
DTC Description 116
Diagnosis Procedure 117

C1130 ENGINE SIGNAL 118
DTC Description 118
Diagnosis Procedure 119

C1140 ACTUATOR RELAY SYSTEM 120
DTC Description 120
Diagnosis Procedure 121

C1142 PRESS SENSOR 122
DTC Description 122
Diagnosis Procedure 123

C1143 STEERING ANGLE SENSOR 125
DTC Description 125
Diagnosis Procedure 126

C1144 INCOMPLETE STEERING ANGLE SENSOR ADJUSTMENT 129
DTC Description 129
Diagnosis Procedure 129

C1145, C1146 YAW RATE/SIDE G SENSOR.. 131
DTC Description 131
Diagnosis Procedure 132

C1155 BRAKE FLUID LEVEL SWITCH 133
DTC Description 133
Diagnosis Procedure 134
Component Inspection 136

C1160 DECEL G SEN SET 137
DTC Description 137
Diagnosis Procedure 138

C1164, C1165 CV SYSTEM 139
DTC Description 139
Diagnosis Procedure 140

C1170 VARIANT CODING 141
DTC Description 141
Diagnosis Procedure 141

C118C HEV SYSTEM 143
DTC Description 143
Diagnosis Procedure 143

C1B63 STROKE SENSOR 145
DTC Description 145
Diagnosis Procedure 145

C1B64 STROKE SENSOR 150
DTC Description 150

Diagnosis Procedure 150

C1B65 INCOMPLETE STROKE SENSOR LEARNING 155
DTC Description 155
Diagnosis Procedure 155

C1B66 STROKE SENSOR 157
DTC Description 157
Diagnosis Procedure 157

C1B68 MOTOR POWER SUPPLY 162
DTC Description 162
Diagnosis Procedure 163

U1000 CAN COMM CIRCUIT 165
DTC Description 165
Diagnosis Procedure 166

U1010 CONTROL UNIT (CAN) 167
DTC Description 167
Diagnosis Procedure 168

POWER SUPPLY AND GROUND CIRCUIT ... 169
Diagnosis Procedure 169

PARKING BRAKE SWITCH 172
Component Function Check 172
Diagnosis Procedure 172
Component Inspection 172

VDC OFF SWITCH 174
Component Function Check 174
Diagnosis Procedure 174
Component Inspection 175

ABS WARNING LAMP 176
Component Function Check 176
Diagnosis Procedure 176

BRAKE WARNING LAMP 177
Component Function Check 177
Diagnosis Procedure 177

BRAKE SYSTEM WARNING LAMP 179
Component Function Check 179
Diagnosis Procedure 179

VDC WARNING LAMP 180
Component Function Check 180
Diagnosis Procedure 180

VDC OFF INDICATOR LAMP 181
Component Function Check 181
Diagnosis Procedure 181

SYMPTOM DIAGNOSIS 182

EXCESSIVE OPERATION FREQUENCY 182
Description 182
Diagnosis Procedure 182

UNEXPECTED BRAKE PEDAL REACTION .. 184
Description 184
Diagnosis Procedure 184

THE BRAKING DISTANCE IS LONG 187
Description 187
Diagnosis Procedure 187

DOES NOT OPERATE 192
Description 192
Diagnosis Procedure 192

BRAKE PEDAL VIBRATION OR OPERATION SOUND OCCURS 193
Description 193
Diagnosis Procedure 193

VEHICLE JERKS DURING 197
Description 197
Diagnosis Procedure 197

NORMAL OPERATING CONDITION 199
Description 199

REMOVAL AND INSTALLATION 200

WHEEL SENSOR 200

FRONT WHEEL SENSOR 200
FRONT WHEEL SENSOR : Exploded View 200
FRONT WHEEL SENSOR : Removal and Installation 200

REAR WHEEL SENSOR 201
REAR WHEEL SENSOR : Exploded View 201
REAR WHEEL SENSOR : Removal and Installation 202

SENSOR ROTOR 203

FRONT SENSOR ROTOR 203
FRONT SENSOR ROTOR : Removal and Installation - Front Sensor Rotor 203

REAR SENSOR ROTOR 203
REAR SENSOR ROTOR : Removal and Installation - Rear Sensor Rotor 203

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) 204
Exploded View 204
Removal and Installation 204

VDC OFF SWITCH 206
Exploded View 206
Removal and Installation 206

STEERING ANGLE SENSOR 208
Exploded View 208
Removal and Installation 208

BRAKE PEDAL STROKE SENSOR 209
Exploded View 209
Removal and Installation 209

FORWARD EMERGENCY BRAKING

PRECAUTION 210

PRECAUTIONS 210
Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER" 210
Precaution for FEB System Service 210
Precaution for Harness Repair 211

SYSTEM DESCRIPTION 212

COMPONENT PARTS 212
Component Parts Location 212
Component Description 213
ADAS Control Unit 214
ICC Sensor 214
Lane Camera Unit 214
Brake Pedal Position Switch / Stop Lamp Switch 214
ICC Steering Switch 215
Chassis Control Module 215
Combination Meter 215
ADAS Control Unit 2 215
Warning Buzzer 216

SYSTEM 217
System Description 217
Fail-safe (ADAS Control Unit) 220
Fail-safe (ADAS Control Unit 2) 220

WARNING/INDICATOR/CHIME LIST 221
WARNING/INDICATOR/CHIME LIST : Warning Lamp/Indicator Lamp 221

OPERATION 222
Switch Name and Function 222
Menu Displayed by Pressing Each Switch 222

HANDLING PRECAUTION 225
Description 225

DIAGNOSIS SYSTEM (ADAS CONTROL UNIT) 226
CONSULT Function (ICC/ADAS) 226

DIAGNOSIS SYSTEM (ADAS CONTROL UNIT 2) 234
CONSULT Function (ICC/ADAS 2) 234

DIAGNOSIS SYSTEM (ICC SENSOR) 240
CONSULT Function (LASER/RADAR) 240

DIAGNOSIS SYSTEM (LANE CAMERA UNIT) 242
CONSULT Function (LANE CAMERA) 242

ECU DIAGNOSIS INFORMATION 244

ADAS CONTROL UNIT 244
Reference Value 244
Fail-safe (ADAS Control Unit) 248
DTC Inspection Priority Chart 248
DTC Index 249

ADAS CONTROL UNIT 2 252
Reference Value 252
Fail-safe (ADAS Control Unit 2) 254
DTC Inspection Priority Chart 255
DTC Index 255

ICC SENSOR 257
Reference Value 257
Fail-safe (ICC Sensor) 258
DTC Inspection Priority Chart 258
DTC Index 259

WIRING DIAGRAM 263

DRIVER ASSISTANCE SYSTEMS 263
Wiring Diagram 263

BASIC INSPECTION 277

DIAGNOSIS AND REPAIR WORK FLOW 277
Work Flow 277

ADDITIONAL SERVICE WHEN REPLACING ICC SENSOR 280
Description 280
Work Procedure 280

ADDITIONAL SERVICE WHEN REPLACING LANE CAMERA UNIT 281
Description 281
Work Procedure 281

PRE-INSPECTION FOR DIAGNOSIS 282

LANE CAMERA UNIT 282
LANE CAMERA UNIT : Inspection Procedure 282

CAMERA AIMING ADJUSTMENT 283
Description 283
Work Procedure (Preparation) 283
Work Procedure (Target Setting) 284
Work Procedure (Camera Aiming Adjustment) 286
Work Procedure (Target Mark Sample) 288

CONFIGURATION (LANE CAMERA UNIT) 290
Description 290
Work Procedure 290

DTC/CIRCUIT DIAGNOSIS 291

C1B00 CAMERA UNIT MALF 291

LANE CAMERA UNIT 291
LANE CAMERA UNIT : DTC Description 291
LANE CAMERA UNIT : Diagnosis Procedure (C1B00-4B) 291
LANE CAMERA UNIT : Diagnosis Procedure (C1B00-04,41,44,45,46,47,48,49,52,56,57,87) 292

C1B01 CAM AIMING INCMP 293

LANE CAMERA UNIT 293
LANE CAMERA UNIT : DTC Description 293
LANE CAMERA UNIT : Diagnosis Procedure 293

C1B03 ABNRML TEMP DETECT 294

LANE CAMERA UNIT 294
LANE CAMERA UNIT : DTC Logic 294
LANE CAMERA UNIT : Diagnosis Procedure 294

ADAS CONTROL UNIT 294
ADAS CONTROL UNIT : DTC Description 294
ADAS CONTROL UNIT : Diagnosis Procedure ... 295

ADAS CONTROL UNIT 2 295
ADAS CONTROL UNIT 2 : DTC Description 295
ADAS CONTROL UNIT 2 : Diagnosis Procedure.. 296

C1B09 POWER SUPPLY CIRCUIT 297
DTC Description 297
Diagnosis Procedure 297

U1000 CAN COMM CIRCUIT 298

LANE CAMERA UNIT 298
LANE CAMERA UNIT : Description 298
LANE CAMERA UNIT : DTC Description 298
LANE CAMERA UNIT : Diagnosis Procedure 298

U1010 CONTROL UNIT (CAN) 300

LANE CAMERA UNIT 300
LANE CAMERA UNIT : Description 300
LANE CAMERA UNIT : DTC Description 300
LANE CAMERA UNIT : Diagnosis Procedure 300

U0104 ADAS CAN 1 301

LANE CAMERA UNIT 301
LANE CAMERA UNIT : DTC Description 301
LANE CAMERA UNIT : Diagnosis Procedure 301

U0126 STRG SEN CAN 1 303

LANE CAMERA UNIT 303
LANE CAMERA UNIT : DTC Description 303
LANE CAMERA UNIT : Diagnosis Procedure 303

U0405 ADAS CAN 2 305

LANE CAMERA UNIT 305
LANE CAMERA UNIT : DTC Description 305
LANE CAMERA UNIT : Diagnosis Procedure 305

U0428 STRG SEN CAN 2 307

LANE CAMERA UNIT 307
LANE CAMERA UNIT : DTC Description 307
LANE CAMERA UNIT : Diagnosis Procedure 307

POWER SUPPLY AND GROUND CIRCUIT .. 309
Diagnosis Procedure 309

FORWARD EMERGENCY BRAKING 310
Diagnosis Procedure 310

SYMPTOM DIAGNOSIS 311

SYSTEM SETTINGS CANNOT BE TURNED ON/OFF ON THE INTEGRAL SWITCH 311
Symptom Table 311
Description 311
Diagnosis Procedure 311

NORMAL OPERATING CONDITION 314
Description 314

PRECAUTION

PRECAUTIONS

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

INFOID:0000000014773837

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, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper repair, 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 Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery or batteries, and wait at least three minutes before performing any service.**

Precaution for Work

INFOID:0000000014773838

- When removing or disassembling each component, be careful not to damage or deform it. If a component may be subject to interference, be sure to protect it with a shop cloth.
- When removing (disengaging) components with a screwdriver or similar tool, be sure to wrap the component with a shop cloth or vinyl tape to protect it.
- Protect the removed parts with a shop cloth and prevent them from being dropped.
- Replace a deformed or damaged clip.
- If a part is specified as a non-reusable part, always replace it with a new one.
- Be sure to tighten bolts and nuts securely to the specified torque.
- After installation is complete, be sure to check that each part works properly.
- Follow the steps below to clean components:

- Water soluble dirt:

- Dip a soft cloth into lukewarm water, wring the water out of the cloth and wipe the dirty area.
- Then rub with a soft, dry cloth.

- Oily dirt:

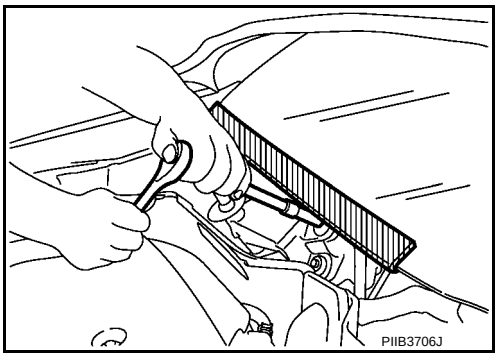
- Dip a soft cloth into lukewarm water with mild detergent (concentration: within 2 to 3%) and wipe the dirty area.
- Then dip a cloth into fresh water, wring the water out of the cloth and wipe the detergent off.
- Then rub with a soft, dry cloth.

- Do not use organic solvent such as thinner, benzene, alcohol or gasoline.
- For genuine leather seats, use a genuine leather seat cleaner.

Precaution for Procedure without Cowl Top Cover

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



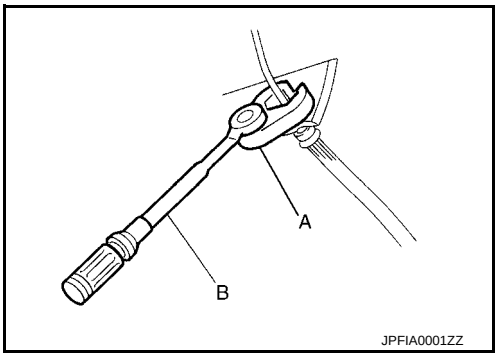
Precaution for Brake System

INFOID:0000000014626309

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 MA-11, "Fluids and Lubricants".
- 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.
- 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

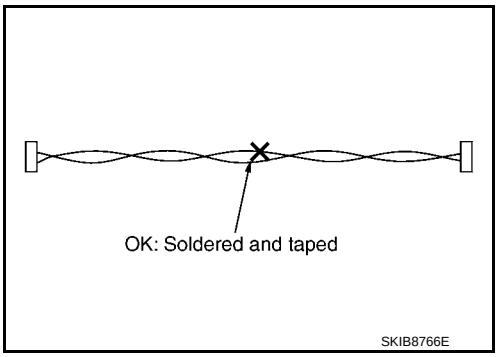
INFOID:0000000014626310

- 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: Suspension-related parts (shock absorber, spring, bushing, etc.), tires, wheels (other than specified sizes), brake-related parts (pad, rotor, caliper, etc.), engine-related parts (muffler, ECM, etc.) and body reinforcement-related parts (roll bar, tower bar, etc.).
- When driving with worn or deteriorated suspension, tires and brake-related parts.

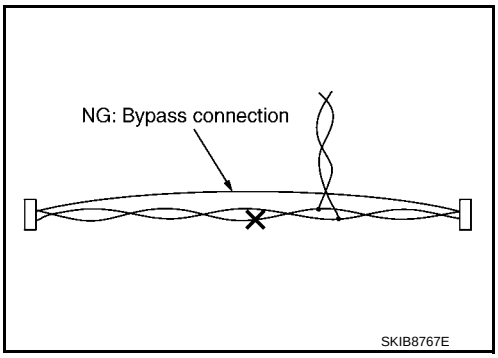
Precaution for Harness Repair

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- 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 turn-out point cannot be separated and the twisted wire characteristics are lost.)



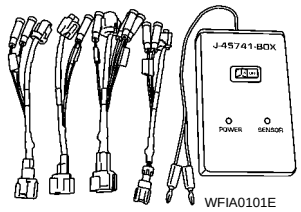
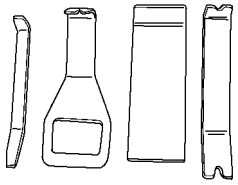
PREPARATION

PREPARATION

Special Service Tool

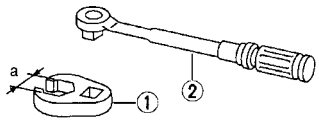
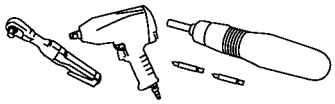
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The actual shape of the tools may differ from those illustrated here.

Tool number (TechMate No.) Tool name	Description
KV991J0080 (J-45741-A) ABS active wheel sensor tester  WFIA0101E	Checking operation of ABS active wheel sensors
— (J-46534) Trim Tool Set  AWJIA0483ZZ	Removing trim components

Commercial Service Tools

INFOID:0000000014626313

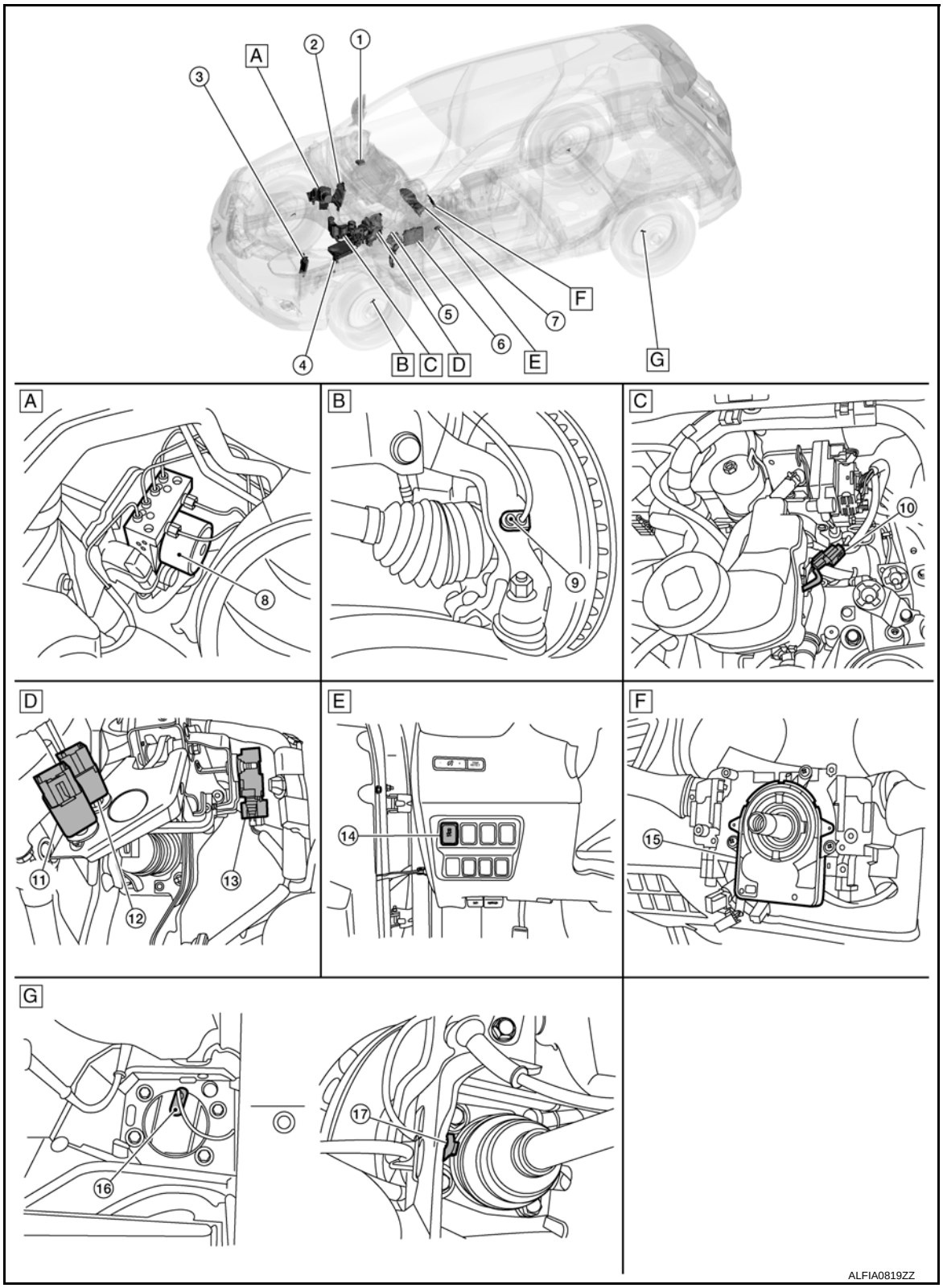
Tool name	Description
1. Flare nut crowfoot 2. Torque wrench  S-NT360	Tightening brake tube flare nuts **a: 10 mm (0.39 in)/12 mm (0.47 in)**
Power tool  PIIB1407E	Loosening nuts, screws and bolts

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000014895550



A. Engine room (RH) B. Steering knuckle C. Engine room (LH)
D. Brake pedal E. Instrument lower panel LH F. Back of spiral cable assembly
G. Rear axle housing

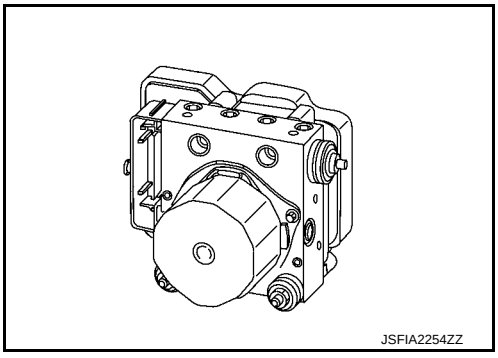
No.	Component parts	Function
1.	Chassis control module	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Active trace control signal • Active ride control signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication. • hill start assist display request signal Mainly transmits the following signals to combination meter via CAN communication. • hill start assist display request signal Refer to CCS-9, "Component Parts Location" for detailed installation location.
2.	HPCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Accelerator pedal position signal • Engine speed signal • Engine status signal • HPCM status signal • Current regenerative torque signal Mainly receives the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Cooperative regenerative practicable torque signal • Braking force signal Refer to HBC-12, "Component Parts Location" for detailed installation location.
3.	TCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Current gear position signal • N range signal • P range signal • R range signal • Shift position signal • TCM malfunction signal Refer to TM-15, "CVT CONTROL SYSTEM : Component Parts Location" for detailed installation location.
4.	IPDM E/R	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Ignition switch ON signal Refer to PCS-6, "Component Parts Location" for detailed installation location.
5.	Parking brake switch	Refer to BRC-16, "Parking Brake Switch".
6.	BCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Stop lamp switch signal • Brake pedal position switch signal • Cranking signal • Ignition switch ON signal Refer to BCS-5, "BODY CONTROL SYSTEM : Component Parts Location" for detailed installation location.

No.	Component parts	Function
7.	Combination meter	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Parking brake switch signal • Brake fluid level switch signal Mainly receives the following signals to ABS actuator and electric unit (control unit) via CAN communication. • ABS warning lamp signal • Brake system warning lamp signal • Brake warning lamp signal • VDC warning lamp signal • VDC OFF indicator lamp signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via chassis control module via CAN communication. • hill start assist display request signal Refer to MWI-5, "METER SYSTEM : Component Parts Location" for detailed installation location.
8.	ABS actuator and electric unit (control unit)	Refer to BRC-12, "ABS Actuator and Electric Unit (Control Unit)".
9.	Front LH wheel sensor	Refer to BRC-13, "Wheel Sensor and Sensor Rotor".
10.	Brake fluid level switch	Refer to BRC-15, "Brake Fluid Level Switch".
11.	Stop lamp switch	Refer to BRC-15, "Brake Pedal Position Switch / Stop Lamp Switch".
12.	Brake pedal position switch	
13.	Stroke sensor	Refer to BRC-15, "Stroke Sensor".
14.	VDC OFF switch	Refer to BRC-15, "VDC OFF Switch".
15.	Steering angle sensor	Refer to BRC-14, "Steering Angle Sensor".
16.	Rear wheel sensor LH (FWD models)	Refer to BRC-13, "Wheel Sensor and Sensor Rotor".
17.	Rear wheel sensor LH (AWD models)	Refer to BRC-13, "Wheel Sensor and Sensor Rotor".

ABS Actuator and Electric Unit (Control Unit)

INFOID:0000000014895551

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



ELECTRIC UNIT (CONTROL UNIT)

- Brake fluid pressure 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 hydraulic brake booster unit by reducing pressure.
- Pressure the brake fluid and send.

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

ABS IN Valve
Switches the fluid pressure line to increase or hold according to signals from control unit.
NOTE:
Valve is a solenoid valve.

ABS OUT Valve
Switches the fluid pressure line to increase, hold or decrease according to signals from control unit.
NOTE:
Valve is a solenoid valve.

Cut Valve1, Cut Valve2
Shuts off the ordinary brake line from hydraulic brake booster unit, when VDC function, TCS function and brake limited slip differential (BLSD) function are activated.
NOTE:
Valve is a solenoid valve.

Inlet Valve
Brake fluid sucked from the reservoir by the pump does not backflow.
NOTE:
Valve is a solenoid valve.

Outlet Valve
Brake fluid discharged from the pump does not backflow.
NOTE:
Valve is a solenoid valve.

Return Check Valve
Returns the brake fluid from brake caliper and wheel cylinder to hydraulic brake booster unit by bypassing orifice of each valve when brake is released.

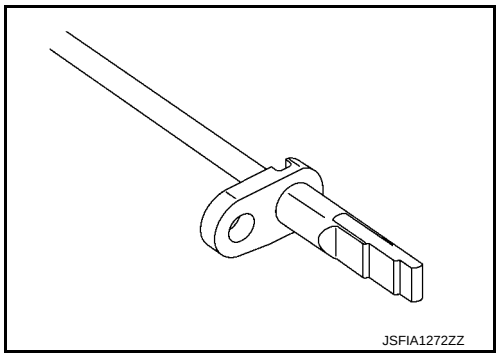
Reservoir
Temporarily reserves the brake fluid drained from brake caliper and wheel cylinder, so that pressure efficiently decreases when decreasing pressure of brake caliper and wheel cylinder.

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) via communication lines. [Yaw rate/side/decel G sensor is integrated in ABS actuator and electric unit (control unit).]
- Vehicle rotation angular velocity (yaw rate signal)
- Vehicle lateral acceleration (side G signal) and longitudinal acceleration (decel G signal)

Pressure Sensor
Detects the brake fluid pressure and transmits signal to ABS actuator and electric unit (control unit). [Pressure sensor is integrated in ABS actuator and electric unit (control unit).]

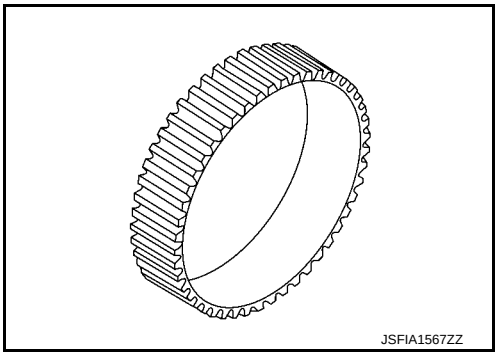
Wheel Sensor and Sensor Rotor

INFOID:0000000014895552

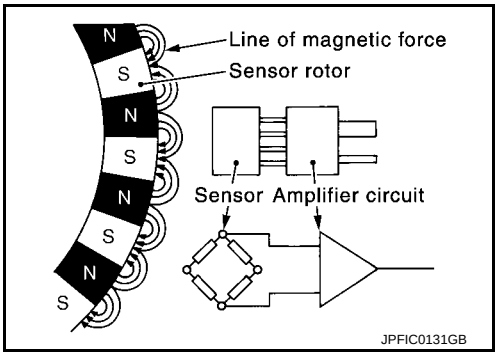


- Wheel sensor of front wheel is installed on steering knuckle.
  CAUTION:
  Never measure resistance and voltage value using a tester because sensor is active sensor.
- Wheel sensor of rear wheel is installed on wheel hub assembly. (2WD models)
  CAUTION:
  Never measure resistance and voltage value using a tester because sensor is active sensor.
- Wheel sensor of rear wheel is installed on rear axle housing. (4WD models)
  CAUTION:
  Never measure resistance and voltage value using a tester because sensor is active sensor.
- Sensor rotor of front wheel is integrated in front wheel hub assembly.
- Sensor rotor of rear wheel is installed in rear wheel hub assembly. (2WD models)

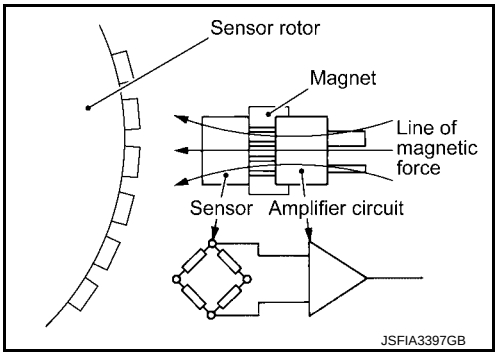
- Sensor rotor of rear wheel is installed on drive shaft (wheel side). (AWD models)



- Downsize and weight reduction is aimed. IC for detection portion and magnet for sensor rotor are adopted. [2WD models (front and rear), 4WD models (front)]



- Downsize and weight reduction is aimed. IC for detection portion for sensor rotor are adopted. [4WD models (rear)]



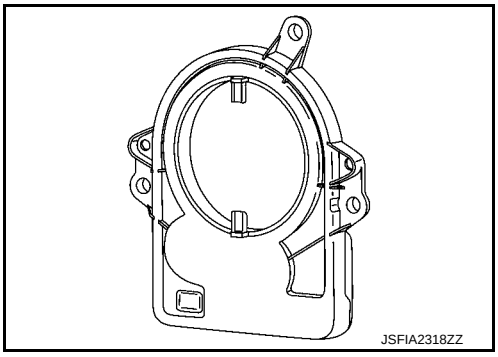
- Power supply is supplied to detection portion so that magnetic field line is read. Magnetic field that is detected is converted to current signal.
- When sensor rotor rotates, magnetic field changes. Magnetic field change is converted to current signals (rectangular wave) and is transmitted to ABS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

Steering Angle Sensor

INFOID:0000000014895553

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

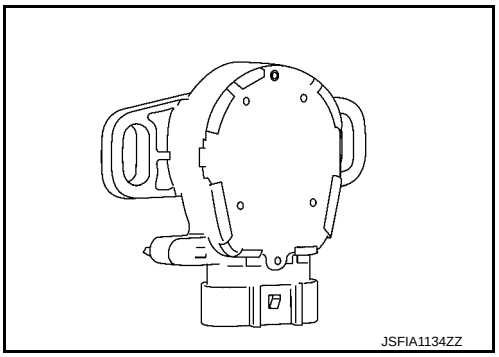
- Steering wheel rotation amount
- Steering wheel rotation angular velocity
- Steering wheel rotation direction



Stroke Sensor

INFOID:0000000014895554

Detect the amount that the brake pedal is depressed and sends it to the ABS actuator and electric unit (control unit).


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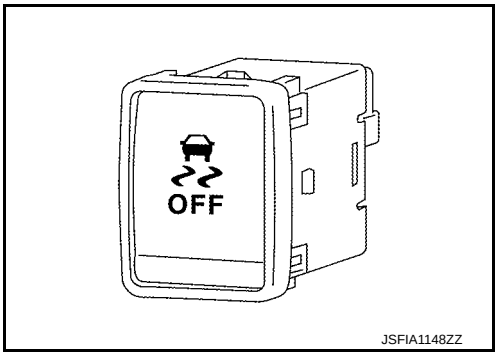
VDC OFF Switch

INFOID:0000000014895555

- 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)
- VDC function
- TCS function
- Active trace control function (control of chassis control module)
- Active ride control function (control of chassis control module)

NOTE:
ABS function, EBD function, brake assist function, brake force distribution function and hill start assist function operates.

- 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).

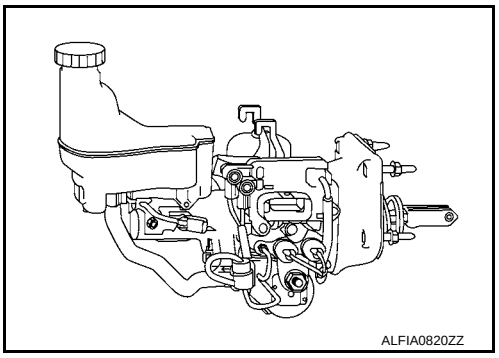


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Brake Fluid Level Switch

INFOID:0000000014895557

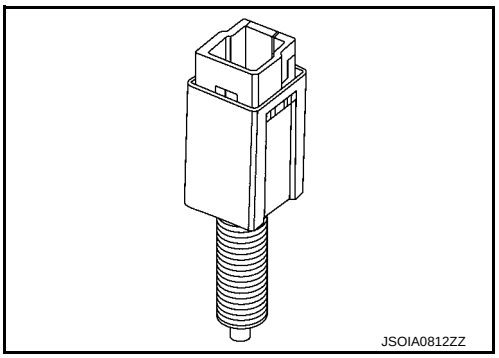
Detects the brake fluid level in reservoir tank and transmits converted electric signal from combination meter to ABS actuator and electric unit (control unit) via CAN communication, when brake fluid level is the specified level or less.


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Brake Pedal Position Switch / Stop Lamp Switch

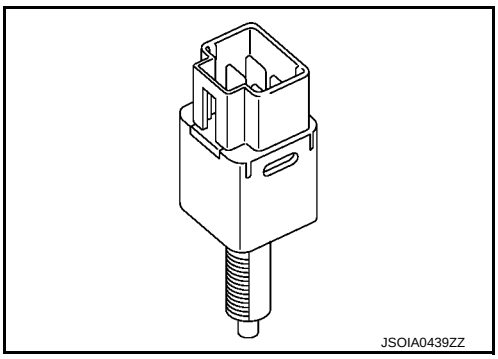
INFOID:0000000015258326

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


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- Brake pedal position switch is turned OFF when depressing the brake pedal.

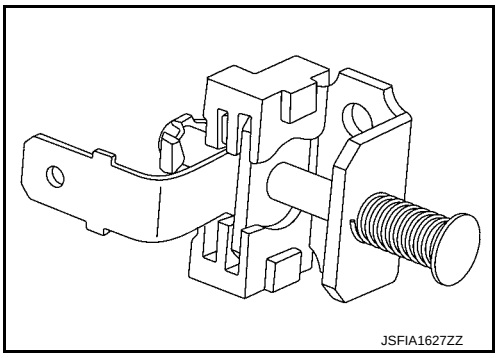
- Brake pedal position switch signal is inputted to ECM. Brake pedal position switch signal is transmitted from ECM to ADAS control unit via CAN communication.
- Stop lamp switch is installed at the upper part of the brake pedal and detects a brake operation performed by the driver.
- Stop lamp switch is turned ON when depressing the brake pedal.
- Stop lamp switch signal is inputted 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.



Parking Brake Switch

INFOID:0000000014895558

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



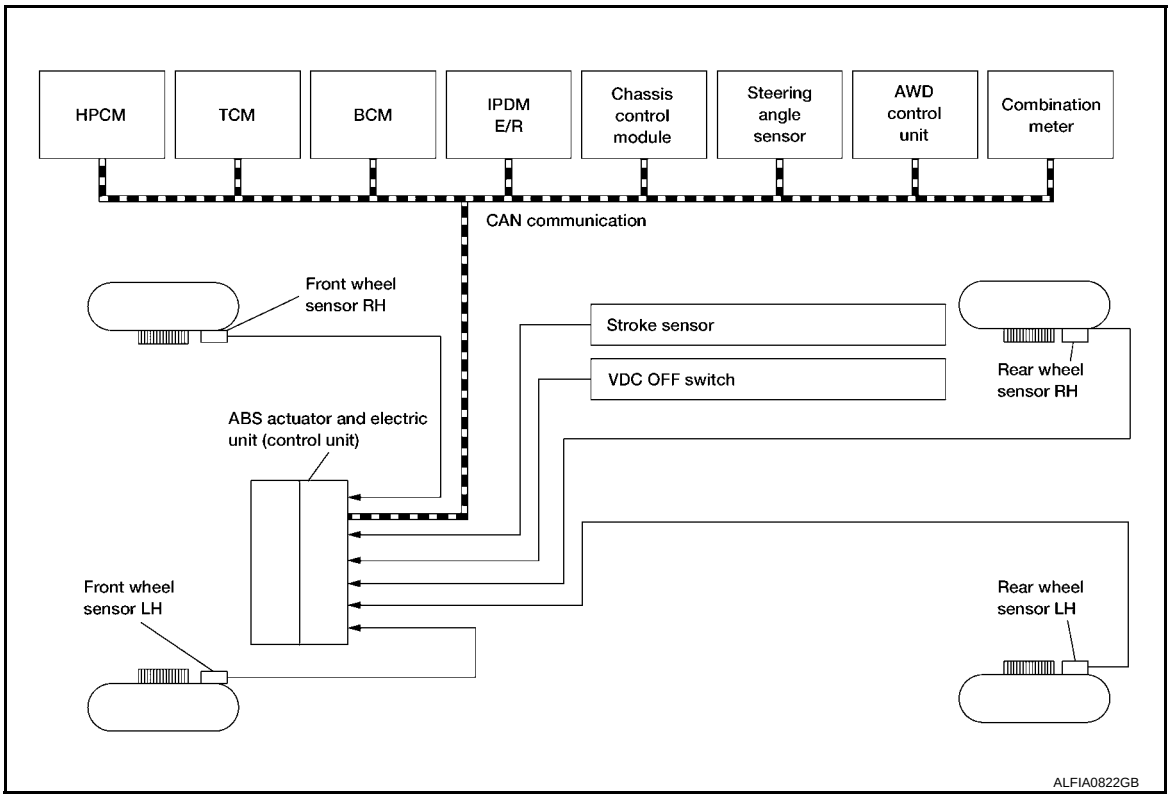
SYSTEM

System Description

INFOID:0000000014895559

- The system switches fluid pressure of each brake 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 function, TCS function, ABS function, EBD function, cooperative regenerative brake function, brake assist function, brake force distribution function and hill start assist function.
- Fail-safe function is available for each function and is activated by each function when system malfunction occurs.

SYSTEM DIAGRAM



INPUT SIGNAL AND OUTRET SIGNAL

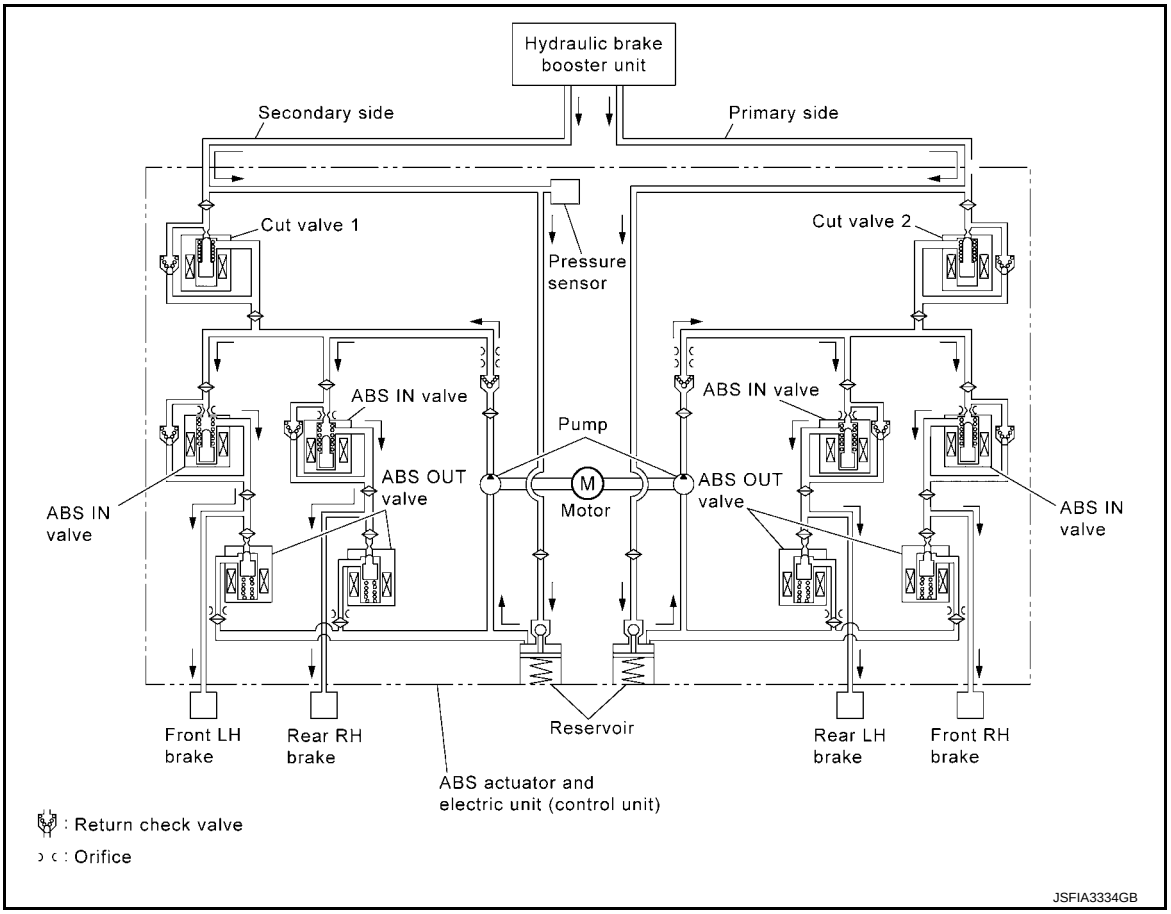
Major signal transmission between each unit via communication lines is shown in the following table.

Component parts	Signal description
Combination meter	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Parking brake switch signal • Brake fluid level switch signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication. • ABS warning lamp signal • VDC OFF indicator signal • VDC warning lamp signal • Brake system warning lamp signal • Brake warning lamp signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via chassis control module via CAN communication. • hill start assist display request signal
TCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • N range signal • P range signal • R range signal • Current gear position signal • Shift position signal • TCM malfunction signal
HPCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Accelerator pedal position signal • Engine speed signal • Engine status signal • HPCM status signal • Current regenerative torque signal Mainly receives the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Cooperative regenerative practicable torque signal • Braking force signal
IPDM E/R	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Ignition switch ON signal
BCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Stop lamp switch signal • Brake pedal position switch signal • Cranking signal • Ignition switch ON signal
Chassis control module	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Active trace control signal • Active ride control signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication. • hill start assist display request signal Mainly transmits the following signals to combination meter via CAN communication. • hill start assist display request signal
AWD control unit	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • AWD malfunction signal • AWD operation signal
Steering angle sensor	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Steering angle sensor signal

VALVE OPERATION [VDC FUNCTION, TCS FUNCTION, BRAKE ASSIST FUNCTION, BRAKE FORCE DISTRIBUTION FUNCTION AND hill start assist FUNCTION

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

When VDC Function, TCS Function, Brake Assist Function, Brake force distribution Function and hill start assist Function is in Operation (During Pressure Increases)



Name	Not activated	During 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)
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 (fluid pressure)	—	Pressure increases

During pressure front RH brake increases
- Motor is activated. Brake fluid from pump is supplied to front RH brake through ABS IN valve. For the left brake, brake fluid pressure is maintained because the pressurization is unnecessary. The pressurization for the left brake is controlled separately from the right brake.

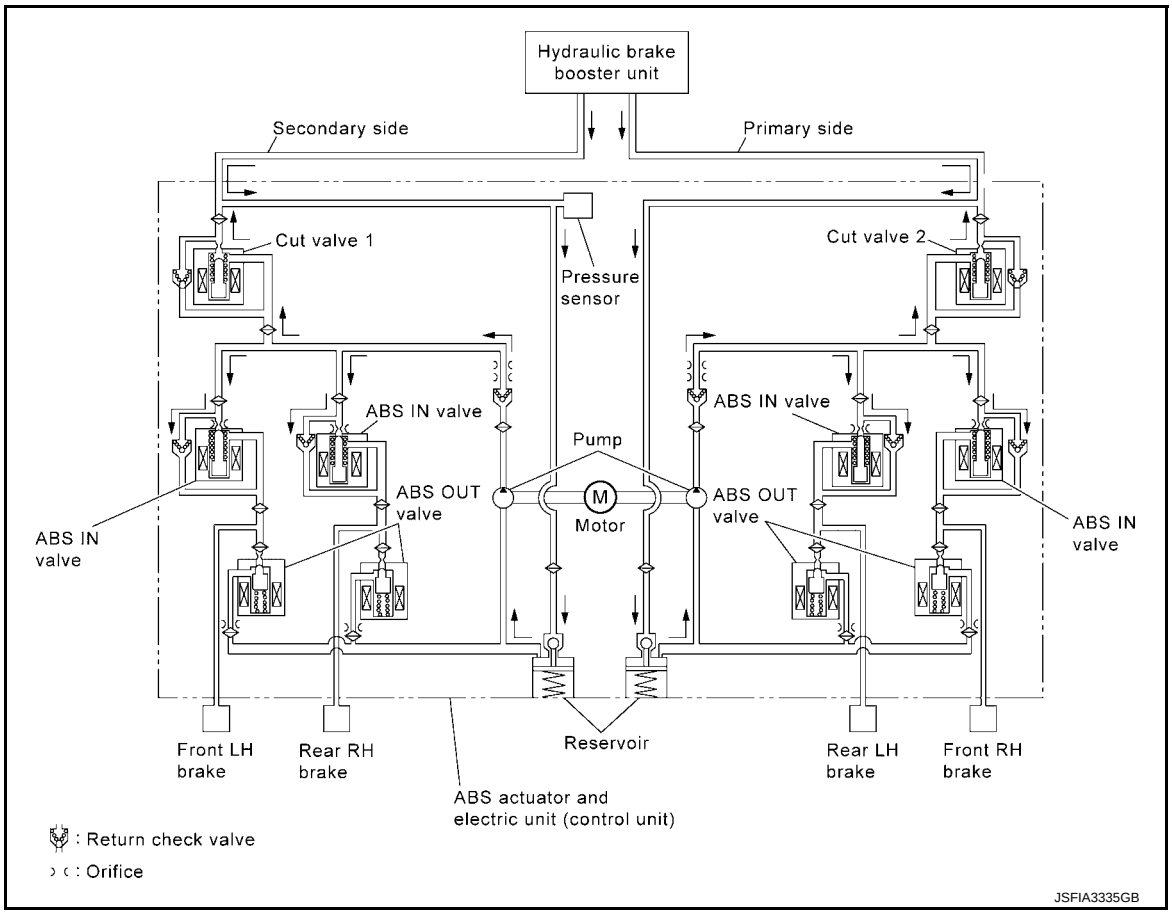
During pressure front LH brake increases
- Motor is activated. Brake fluid from pump is supplied to front LH brake through ABS IN valve. For the right brake, brake fluid pressure is maintained because the pressurization is unnecessary. The pressurization for the right brake is controlled separately from the left brake.

During pressure rear RH brake increases
- Motor is activated. Brake fluid from pump is supplied to front RH brake through ABS IN valve. For the left brake, brake fluid pressure is maintained because the pressurization is unnecessary. The pressurization for the left brake is controlled separately from the right brake.

During pressure rear LH brake increases

- Motor is activated. Brake fluid from pump is supplied to front LH brake through ABS IN valve. For the right brake, brake fluid pressure is maintained because the pressurization is unnecessary. The pressurization for the right brake is controlled separately from the left brake.

When VDC Function, TCS Function, Brake Assist Function, Brake force distribution Function and hill start assist Function starts Operating (During Pressure Holds)



Name	Not activated	During Pressure holds
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 not supplied (close)
Each brake (fluid pressure)	—	Pressure holds

During pressure front RH brake holds

- Motor is activated. Brake fluid is pressurized by pump and is sent to primary line through cut valve 2. At the same time, because ABS IN valve and ABS OUT vale are closed, fluid pressure of front RH brake holds. The pressurization for the left brake is controlled separately from the right brake.

During pressure front LH brake holds

- Motor is activated. Brake fluid is pressurized by pump and is sent to secondary line through cut valve 1. At the same time, because ABS IN valve and ABS OUT vale are closed, fluid pressure of front LH brake holds. The pressurization for the right brake is controlled separately from the left brake.

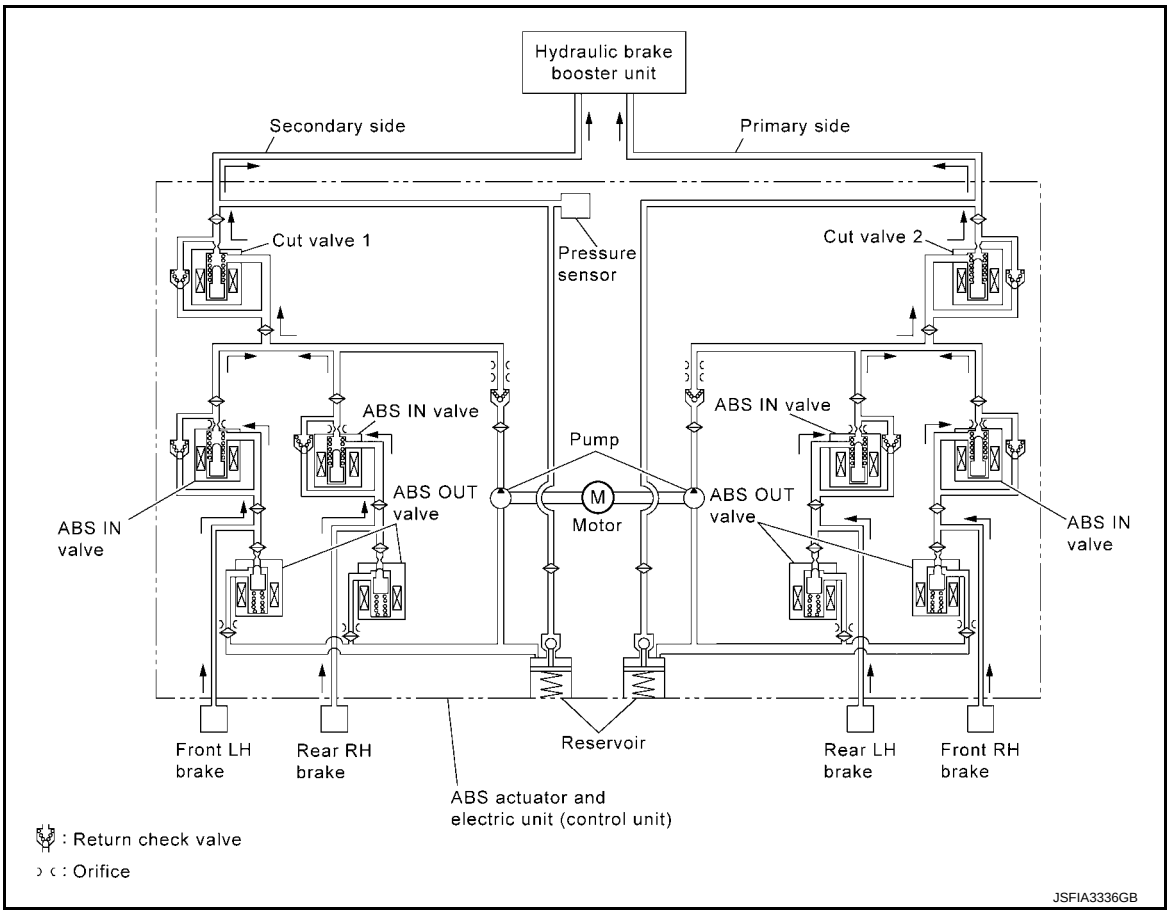
During pressure rear RH brake holds

- Motor is activated. Brake fluid is pressurized by pump and is sent to secondary line through cut valve 1. At the same time, because ABS IN valve and ABS OUT vale are closed, fluid pressure of rear RH brake holds. The pressurization for the left brake is controlled separately from the right brake.

During pressure rear LH brake holds

- Motor is activated. Brake fluid is pressurized by pump and is sent to primary line through cut valve 2. At the same time, because ABS IN valve and ABS OUT vale are closed, fluid pressure of rear LH brake holds. The pressurization for the right brake is controlled separately from the left brake.

When VDC Function, TCS Function, Brake Assist Function, Brake force distribution Function and hill start assist Function is in Operation (During Pressure Decrease)



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)
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 supplied (open)
Each brake (fluid pressure)	—	Pressure decreases

During pressure front RH brake decreased
- Being returned to hydraulic brake booster unit through ABS IN valve, fluid pressure of front RH brake is decreased. The pressurization for the right brake is controlled separately from the left brake.

During pressure front LH brake decreased
- Being returned to hydraulic brake booster unit through ABS IN valve, fluid pressure of front LH brake is decreased. The pressurization for the left brake is controlled separately from the right brake.

During pressure rear RH brake decreased
- Being returned to hydraulic brake booster unit through ABS IN valve, fluid pressure of rear RH brake is decreased. The pressurization for the right brake is controlled separately from the left brake.

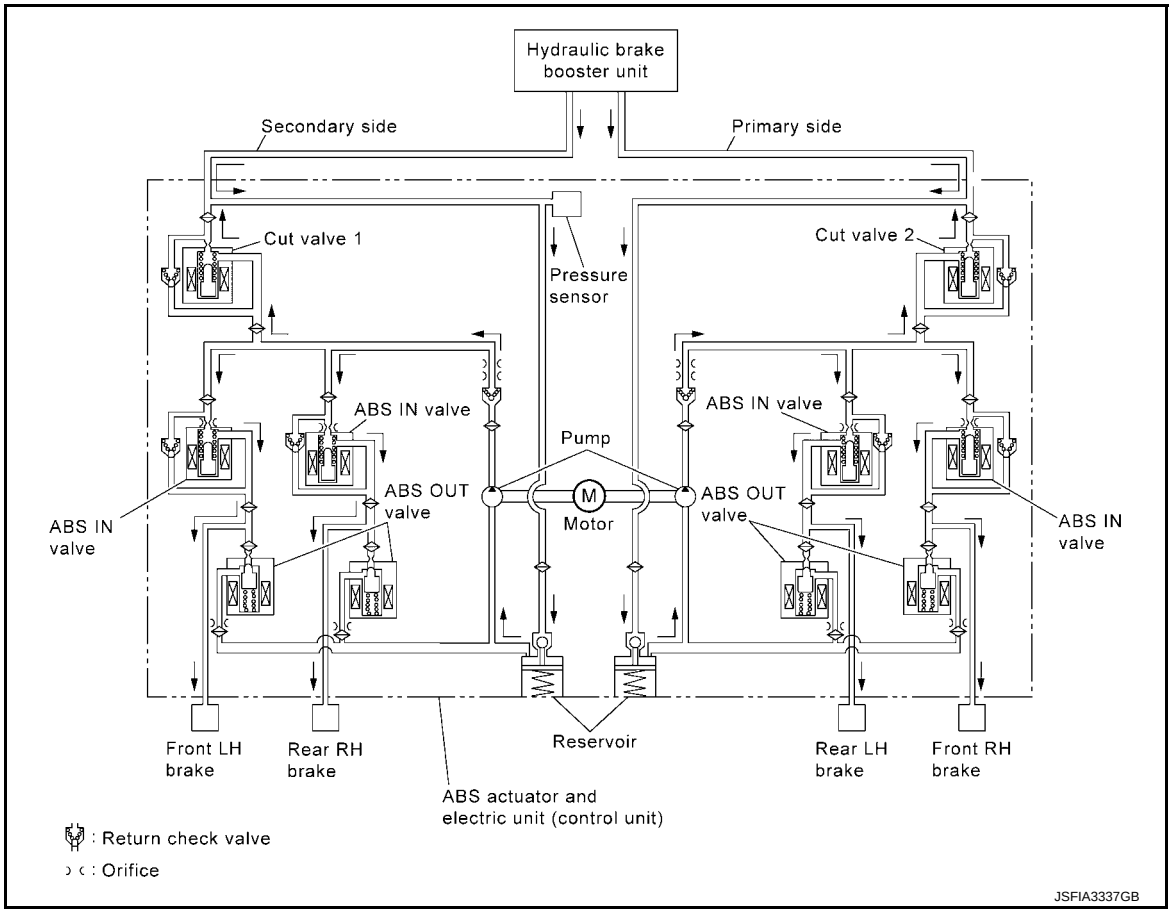
During pressure rear LH brake decreased
- Being returned to hydraulic brake booster unit through ABS IN valve, fluid pressure of rear LH brake is decreased. The pressurization for the left brake is controlled separately from the right brake.

Component Parts and Function

Component	Function
Pump	• Returns the brake fluid reserved in reservoir to hydraulic brake booster unit by reducing pressure. • Pressure the brake fluid and send.
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 hydraulic brake booster 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 each brake to hydraulic brake booster unit by bypassing orifice of each valve when brake is released.
Reservoir	Temporarily reserves the brake fluid drained from each brake, so that pressure efficiently decreases when decreasing pressure of each brake.
Pressure sensor	Detects the brake fluid pressure and transmits signal to ABS actuator and electric unit (control unit).

VALVE OPERATION (ABS FUNCTION AND EBD FUNCTION)

When Brake Pedal is Applied



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)
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 (fluid pressure)	—	Pressure increases

During pressure front RH brake increases

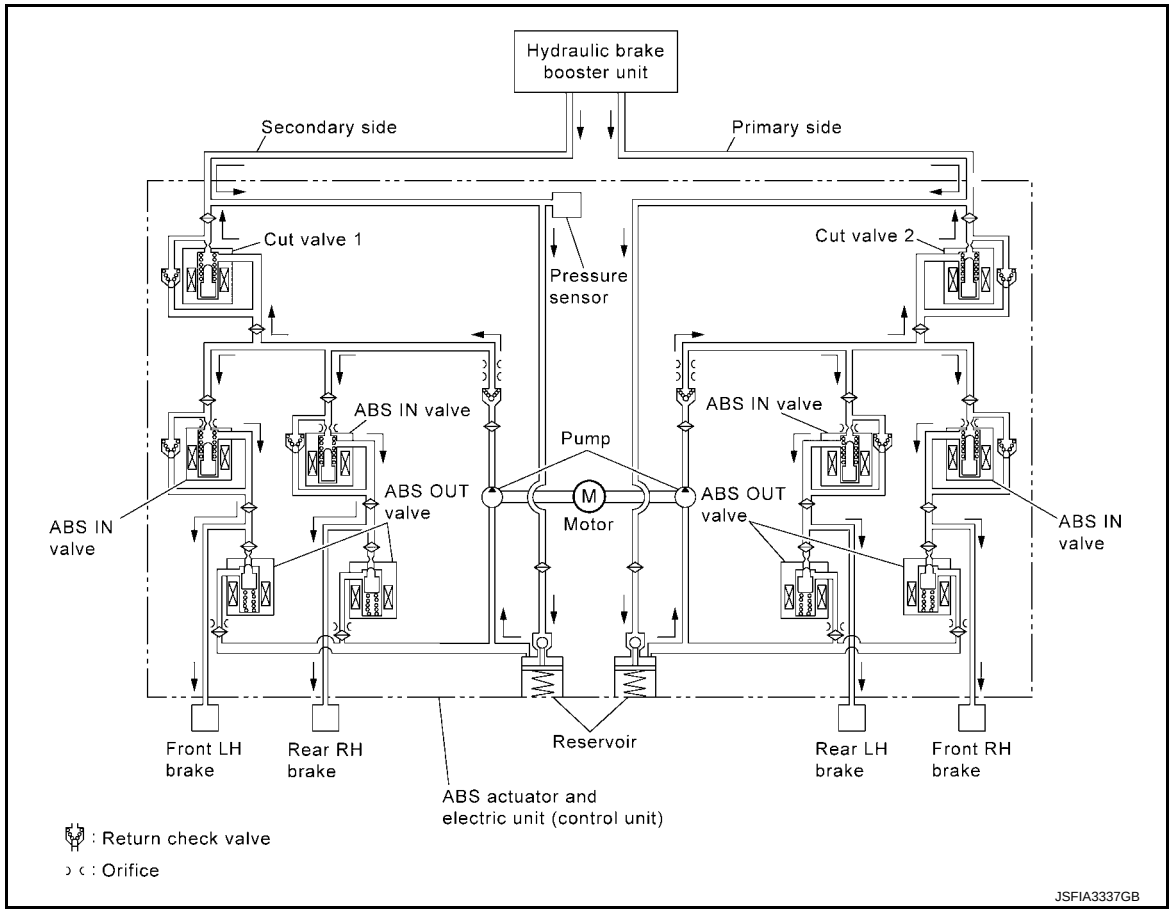
- Brake fluid is supplied to the front RH brake from the hydraulic brake booster unit through the ABS IN valve. A part of brake fluid is sent to primary line through cut valve 2. Brake fluid does not flow into the reservoir because the ABS OUT valve is closed.

During pressure front LH brake increases
- Brake fluid is supplied to the front LH brake from the hydraulic brake booster unit through the ABS IN valve. A part of brake fluid is sent to secondary line through cut valve 1. Brake fluid does not flow into the reservoir because the ABS OUT valve is closed.

During pressure rear RH brake increases
- Brake fluid is supplied to the rear RH brake from the hydraulic brake booster unit through the ABS IN valve. A part of brake fluid is sent to secondary line through cut valve 1. Brake fluid does not flow into the reservoir because the ABS OUT valve is closed.

During pressure rear LH brake increases
- Brake fluid is supplied to the rear LH brake from the hydraulic brake booster unit through the ABS IN valve. A part of brake fluid is sent to primary line through cut valve 2. Brake fluid does not flow into the reservoir because the ABS OUT valve is closed.

When ABS Function is in Operation (During 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 brake (fluid pressure)	—	Pressure increases

During pressure front RH brake increases
- Motor is activated. Brake fluid is pressurized by pump and is sent to primary line through cut valve 2. At the same time, pressurized brake fluid is supplied to front RH brake through ABS IN valve. Brake fluid does not

flow into the reservoir because the ABS OUT valve is closed. The amount of brake fluid supplied to the front RH brake from the hydraulic brake booster unit is controlled according to time that the ABS IN valve is not energized (time that the ABS IN valve is open).

During pressure front LH brake increases

- Motor is activated. Brake fluid is pressurized by pump and is sent to secondary line through cut valve 1. At the same time, pressurized brake fluid is supplied to front LH brake through ABS IN valve. Brake fluid does not flow into the reservoir because the ABS OUT valve is closed. The amount of brake fluid supplied to the front LH brake from the hydraulic brake booster unit is controlled according to time that the ABS IN valve is not energized (time that the ABS IN valve is open).

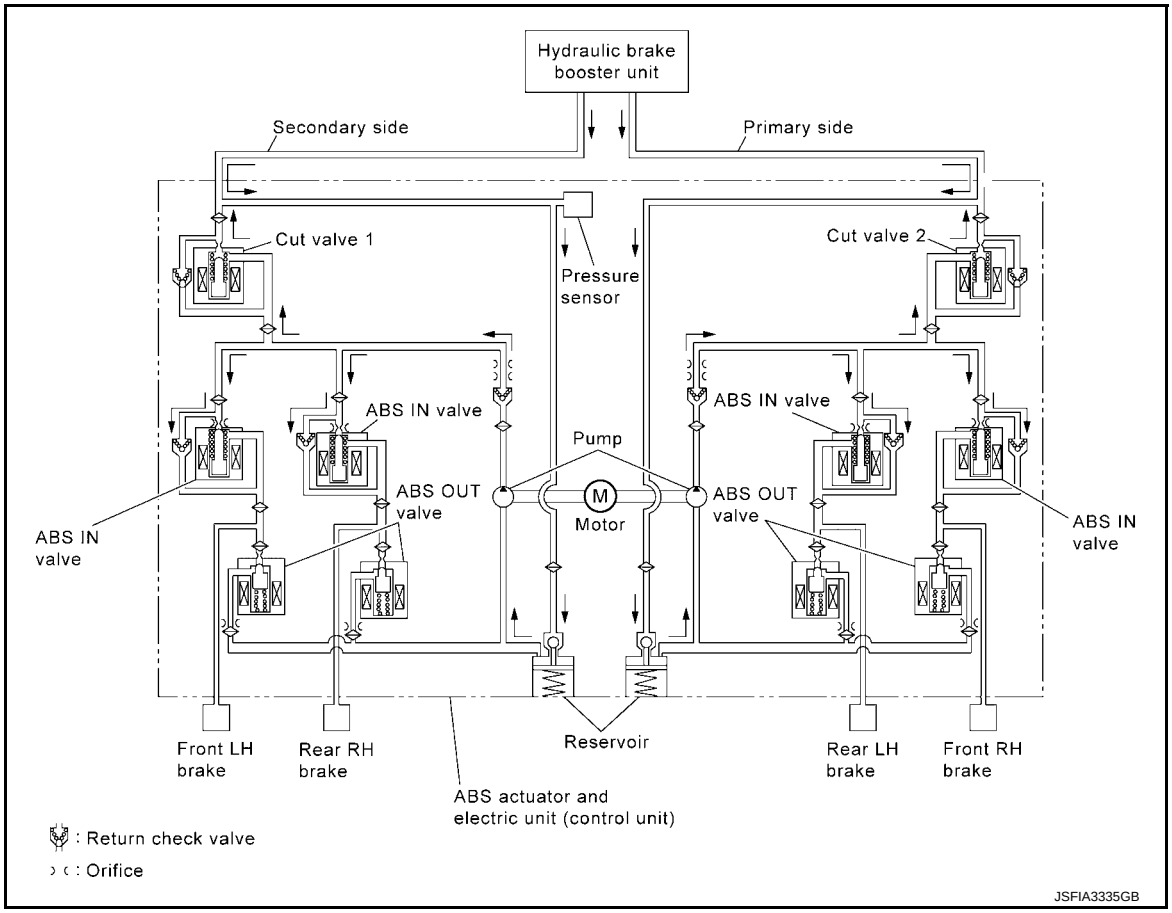
During pressure rear RH brake increases

- Motor is activated. Brake fluid is pressurized by pump and is sent to secondary line through cut valve 1. At the same time, pressurized brake fluid is supplied to rear RH brake through ABS IN valve. Brake fluid does not flow into the reservoir because the ABS OUT valve is closed. The amount of brake fluid supplied to the rear RH brake from the hydraulic brake booster unit is controlled according to time that the ABS IN valve is not energized (time that the ABS IN valve is open).

During pressure rear LH brake increases

- Motor is activated. Brake fluid is pressurized by pump and is sent to primary line through cut valve 2. At the same time, pressurized brake fluid is supplied to rear LH brake through ABS IN valve. Brake fluid does not flow into the reservoir because the ABS OUT valve is closed. The amount of brake fluid supplied to the rear LH brake from the hydraulic brake booster unit is controlled according to time that the ABS IN valve is not energized (time that the ABS IN valve is open).

When ABS Function is Starts Operating (During Pressure Holds)



Name	Not activated	During pressure holds
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)

Name	Not activated	During pressure holds
ABS OUT valve	Power supply is not supplied (close)	Power supply is not supplied (close)
Each brake (fluid pressure)	—	Pressure holds

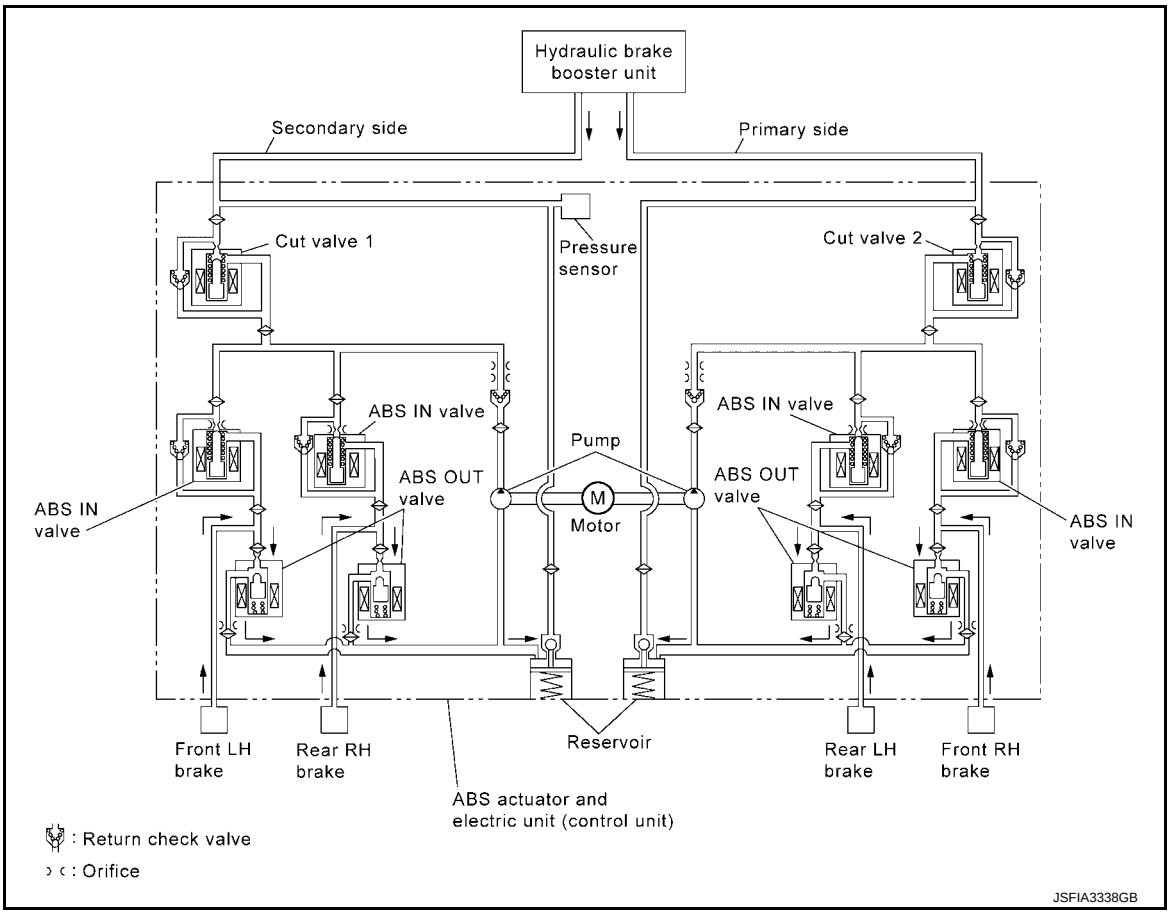
During pressure front RH brake holds
- Motor is activated. Brake fluid is pressurized by pump and is sent to primary line through cut valve 2. At the same time, because ABS IN valve and ABS OUT vale are closed, fluid pressure holds.

During pressure front LH brake holds
- Motor is activated. Brake fluid is pressurized by pump and is sent to secondary line through cut valve 1. At the same time, because ABS IN valve and ABS OUT vale are closed, fluid pressure holds.

During pressure rear RH brake holds
- Motor is activated. Brake fluid is pressurized by pump and is sent to secondary line through cut valve 1. At the same time, because ABS IN valve and ABS OUT vale are closed, fluid pressure holds.

During pressure rear LH brake holds
- Motor is activated. Brake fluid is pressurized by pump and is sent to primary line through cut valve 2. At the same time, because ABS IN valve and ABS OUT vale are closed, fluid pressure holds.

When ABS Function is in Operation (During 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)
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 brake (fluid pressure)	—	Pressure decreases

During pressure front RH brake decreased

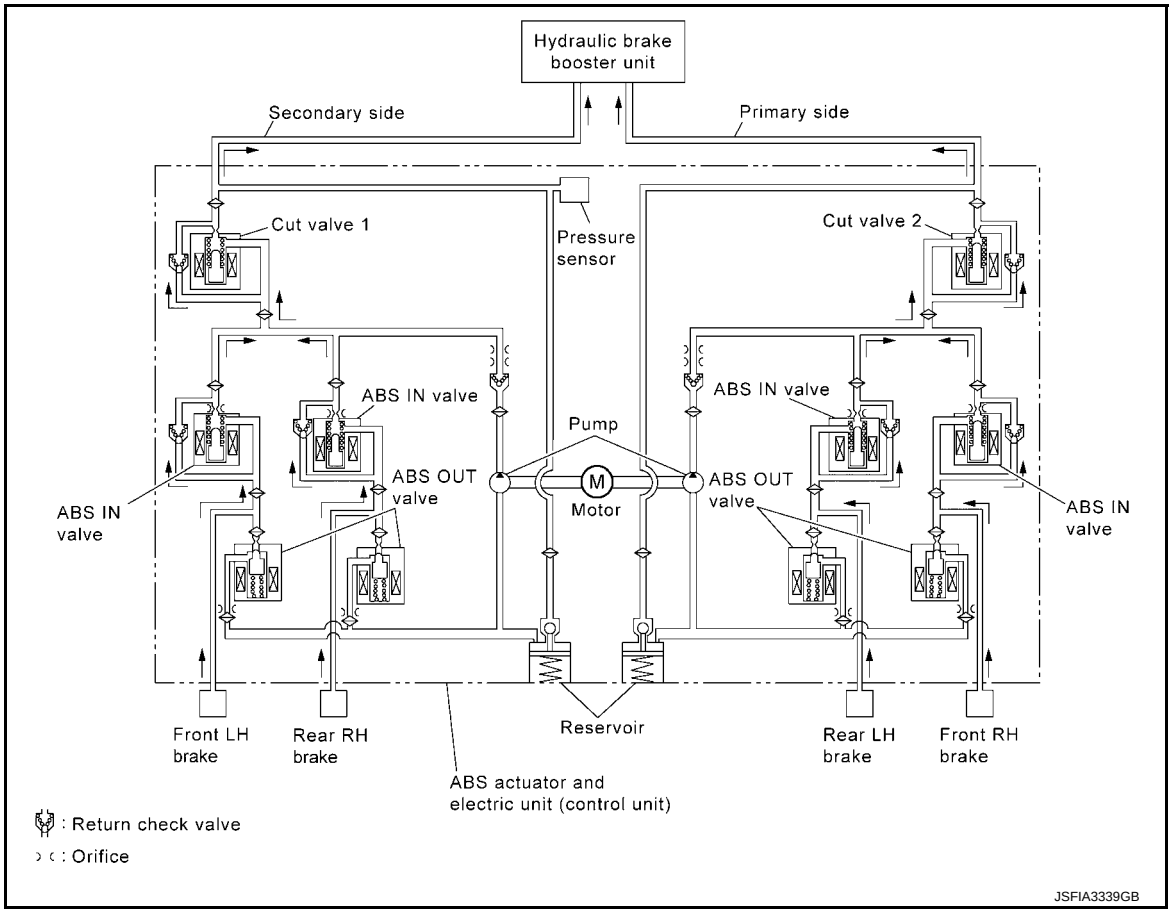
• Brake fluid of front RH brake is supplied to reservoir through ABS OUT valve and decreased.

During pressure front LH brake decreased
• Brake fluid of front LH brake is supplied to reservoir through ABS OUT valve and decreased.

During pressure rear RH brake decreased
• Brake fluid of rear RH brake is supplied to reservoir through ABS OUT valve and decreased.

During pressure rear LH brake decreased
• Brake fluid of rear LH brake is supplied to reservoir through ABS OUT valve and decreased.

When 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)
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 supplied (open)
Each brake (fluid pressure)	—	Pressure decreases

During pressure front RH brake release
• Brake fluid pressure is supplied to the front RH brake through the return check valve of the ABS IN valve and the cut valve 2, and returns to the hydraulic brake booster unit.

During pressure front LH brake release
• Brake fluid pressure is supplied to the front LH brake through the return check valve of the ABS IN valve and the cut valve 1, and returns to the hydraulic brake booster unit.

During pressure rear RH brake release
• Brake fluid pressure is supplied to the rear RH brake through the return check valve of the ABS IN valve and the cut valve 1, and returns to the hydraulic brake booster unit.

During pressure rear LH brake release

- Brake fluid pressure is supplied to the rear LH brake through the return check valve of the ABS IN valve and the cut valve 2, and returns to the hydraulic brake booster unit.

Component Parts and Function

Component	Function
Pump	• Returns the brake fluid reserved in reservoir to hydraulic brake booster unit by reducing pressure. • Pressure the brake fluid and send.
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 hydraulic brake booster 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 each brake to hydraulic brake booster unit by bypassing orifice of each valve when brake is released.
Reservoir	Temporarily reserves the brake fluid drained from each brake, so that pressure efficiently decreases when decreasing pressure of each brake.
Pressure sensor	Detects the brake fluid pressure and transmits signal to ABS actuator and electric unit (control unit).

CONDITION FOR 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 (red)	Brake system warning lamp (yellow)	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. 1 second after ignition switch is turned ON (when the before READY/engine starts, system is in normal operation)	OFF	ON	ON	OFF
After READY/engine starts	OFF	OFF	OFF	OFF
When parking brake operates (parking brake switch ON)	OFF	ON	OFF	OFF
When brake fluid is less than the specified level (brake fluid level switch ON)	OFF	ON	OFF	ON
VDC function is malfunctioning	OFF	OFF	ON	ON
TCS function is malfunctioning	OFF	OFF	ON	ON
ABS function is malfunctioning	ON	OFF	ON	ON
EBD function is malfunctioning	ON	ON	ON	ON
Cooperative regenerative brake function is malfunctioning	ON	OFF	ON	OFF
Brake assist function is malfunctioning	OFF	OFF	ON	ON
Brake force distribution function is malfunctioning	OFF	OFF	ON	ON
hill start assist function is malfunctioning	OFF	OFF	ON	ON
VDC function is operating	OFF	OFF	OFF	Blinking
TCS function is operating	OFF	OFF	OFF	Blinking
ABS is operating	OFF	OFF	OFF	OFF
EBD is operating	OFF	OFF	OFF	OFF
Brake assist function is operating	OFF	OFF	OFF	OFF
Brake force distribution function is operating	OFF	OFF	OFF	OFF
hill start assist function is operating	OFF	OFF	OFF	OFF

CONDITION FOR TURN ON THE INDICATOR LAMP

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
Approx. 1 second after ignition switch is turned ON (when the before READY/engine starts, system is in normal operation)	OFF
After READY/engine starts	OFF
When VDC OFF switch is ON (VDC function and TCS function are OFF)	ON
VDC function is malfunctioning	OFF
TCS function is malfunctioning	OFF

Fail-safe

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VDC FUNCTION, TCS FUNCTION, BRAKE ASSIST FUNCTION, BRAKE FORCE DISTRIBUTION FUNCTION and hill start assist FUNCTION

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, brake force distribution function, hill start assist function, active trace control function (control of chassis control module) and active ride control function (control of chassis control module). The vehicle status becomes the same as models without VDC function, TCS function, brake assist function, brake force distribution function, hill start assist function, active trace control function (control of chassis control module) and active ride control function (control of chassis control module). 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, brake force distribution function, hill start assist function, active trace control function (control of chassis control module) and active ride control function (control of chassis control module). The vehicle status becomes the same as models without VDC function, TCS function, ABS function, brake assist function, brake force distribution function, hill start assist function, active trace control function (control of chassis control module) and active ride control function (control of chassis control module). 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, brake force distribution function, hill start assist function, active trace control function (control of chassis control module) and active ride control function (control of chassis control module). The vehicle status becomes the same as models without VDC function, TCS function, ABS function, EBD function, brake assist function, brake force distribution function, hill start assist function, active trace control function (control of chassis control module) and active ride control function (control of chassis control module).

DTC	Fail-safe condition
C1101 C1102 C1103 C1104 C1105 C1106 C1107 C1108	The following functions are suspended. • VDC function • TCS function • ABS function • EBD function (only when both 2 rear wheels are malfunctioning) • Brake assist function • Brake force distribution function • hill start assist function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)

DTC	Fail-safe condition
C1109	The following functions are suspended. • VDC function • TCS function • ABS function • EBD function • Brake assist function • Brake force distribution function • hill start assist function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)
C1111	The following functions are suspended. • VDC function • TCS function • ABS function • Brake assist function • Brake force distribution function • hill start assist function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)
C1115	The following functions are suspended. • VDC function • TCS function • ABS function • EBD function • Brake assist function • Brake force distribution function • hill start assist function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)
C1116	The following functions are suspended. • VDC function • TCS function • Brake assist function • Brake force distribution function • hill start assist function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)
C1120 C1121 C1122 C1123 C1124 C1125 C1126 C1127	The following functions are suspended. • VDC function • TCS function • ABS function • EBD function • Brake assist function • Brake force distribution function • hill start assist function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)
C1130	The following functions are suspended. • VDC function • TCS function • Brake force distribution function • hill start assist function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)

DTC	Fail-safe condition
C1140	The following functions are suspended. • VDC function • TCS function • ABS function • EBD function • Brake assist function • Brake force distribution function • hill start assist function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)
C1142	The following functions are suspended. • VDC function • TCS function • Brake assist function • hill start assist function • Brake force distribution function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)
C1143 C1144	The following functions are suspended. • VDC function • TCS function • hill start assist function • Brake force distribution function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)
C1145 C1146	The following functions are suspended. • VDC function • TCS function • ABS function*1 • Brake assist function*1 • hill start assist function • Brake force distribution function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)
C1155	The following functions are suspended. • VDC function • TCS function • Brake assist function • hill start assist function • Brake force distribution function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)
C1160	The following functions are suspended. • VDC function • TCS function • ABS function*1 • Brake assist function*1 • hill start assist function • Brake force distribution function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)
C1164 C1165 C1170	The following functions are suspended. • VDC function • TCS function • ABS function • EBD function • Brake assist function • Brake force distribution function • hill start assist function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)

DTC	Fail-safe condition
C118C	Cooperative regenerative brake function is suspended.
C1B63	
C1B64	
C1B65	
C1B66	
C1B68	The following functions are suspended. • VDC function • TCS function • ABS function • Brake assist function • Brake force distribution function • hill start assist function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)
U1000 U1010	The following functions are suspended. • VDC function • TCS function • ABS function*2 • EBD function*2 • Brake assist function • Brake force distribution function • hill start assist function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)

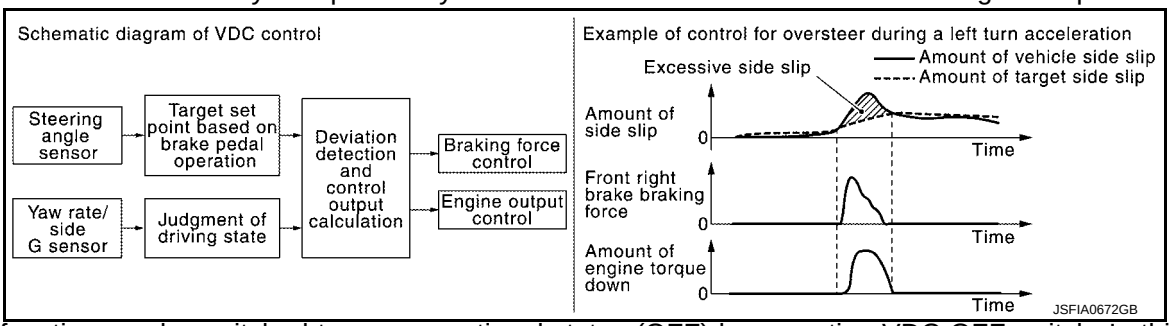
*1: AWD models
*2: When a malfunction detected in CAN communication [between ABS actuator and electric unit (control unit) and chassis control module].

VDC FUNCTION

VDC FUNCTION : System Description

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- Side slip or tail slip may occur while driving on a slippery road or intending an 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 TCS function, ABS function and EBD function, target side slip amount is calculated according to steering operation amount from steering angle sensor and brake operation amount from pressure sensor. By comparing this information with vehicle side slip amount that is calculated from information from yaw rate/ side 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 4 wheels and engine output control.

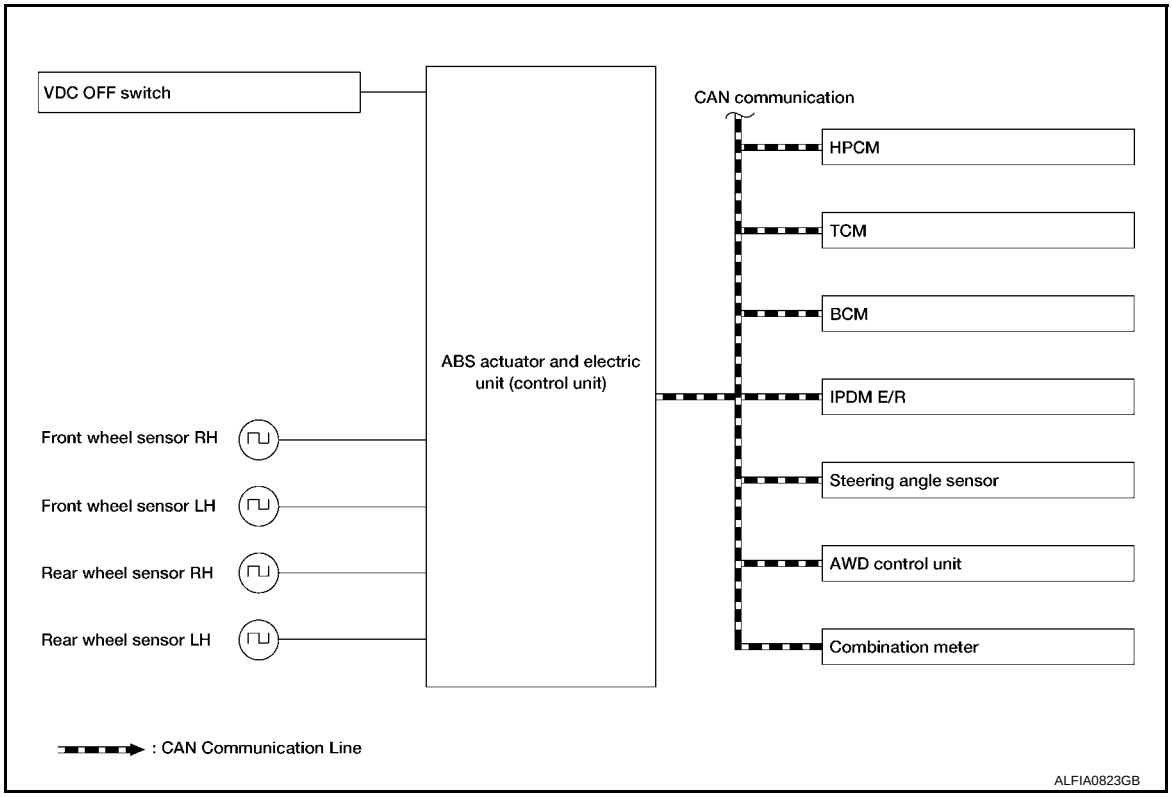


- VDC function can be switched to non-operational status (OFF) by operating VDC OFF switch. In this case, VDC OFF indicator lamp turns ON.
- Control unit portion automatically improves driving stability by performing brake force control as well as engine output control, by transmitting drive signal to 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, brake force distribution function, hill start assist function, active trace control function (control of chassis control module) and active ride control function (control of chassis control module). The vehicle status becomes the same as models without VDC function, TCS function, brake assist function, brake force distribution function, hill start assist function, active trace control function (control of chassis control module) and active ride control function (control of chassis control module). However, ABS function and EBD function are operated normally. Refer to BRC-28, "Fail-safe".
  NOTE:
  VDC has the characteristic as described here, This is not the device that helps reckless driving.

SYSTEM DIAGRAM

NOTE:
AWD control unit is applied to AWD models.



INPUT SIGNAL AND OUTPUT SIGNAL

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

Component parts	Signal description
Combination meter	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Parking brake switch signal • Brake fluid level switch signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication. • ABS warning lamp signal • VDC OFF indicator signal • VDC warning lamp signal • Brake system warning lamp signal • Brake warning lamp signal
TCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • N range signal • P range signal • R range signal • Current gear position signal • Shift position signal • TCM malfunction signal

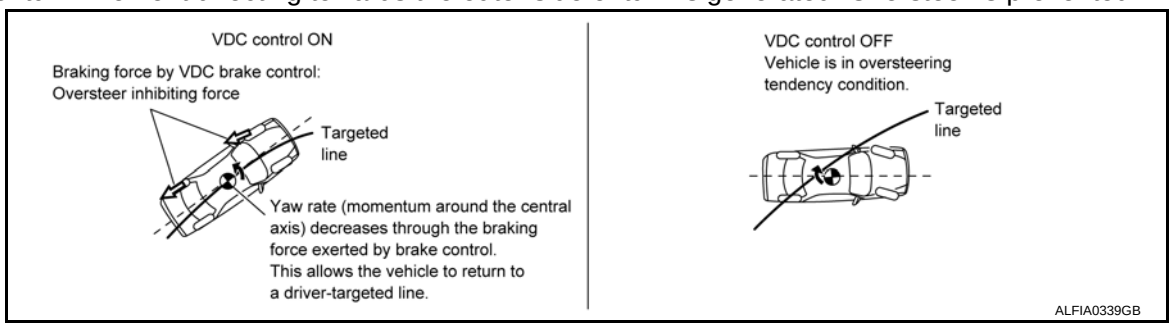
Component parts	Signal description
HPCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Accelerator pedal position signal • Engine speed signal • Engine status signal • HPCM status signal • Current regenerative torque signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication. • Cooperative regenerative practicable torque signal • Braking force signal
IPDM E/R	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Ignition switch ON signal
BCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Stop lamp switch signal • Brake pedal position switch signal • Cranking signal • Ignition switch ON signal
AWD control unit*	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • AWD malfunction signal • AWD operation signal
Steering angle sensor	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Steering angle sensor signal

*: AWD models

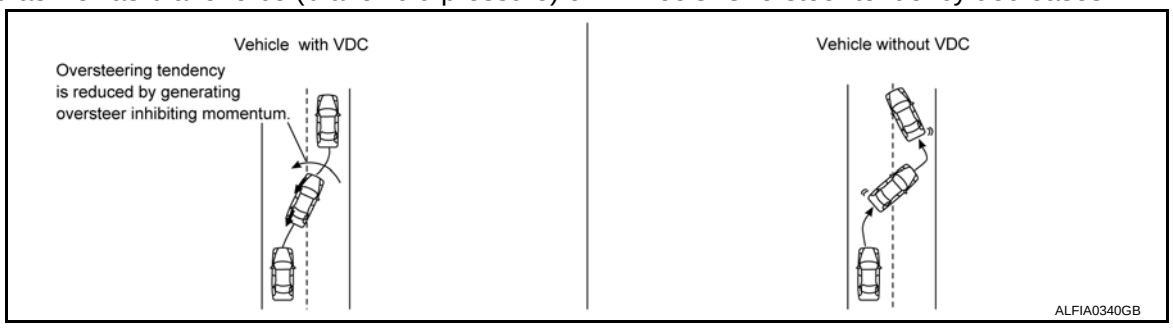
OPERATION CHARACTERISTICS

VDC Function That Prevents Oversteer Tendency

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

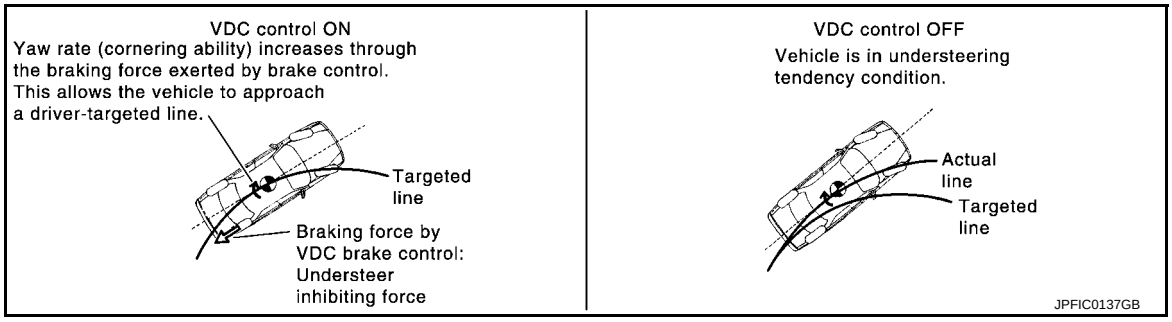


- Changing driving lane on a slippery road, when oversteer tendency is judged large, engine output is controlled as well as brake force (brake fluid pressure) of 4 wheels. Oversteer tendency decreases.

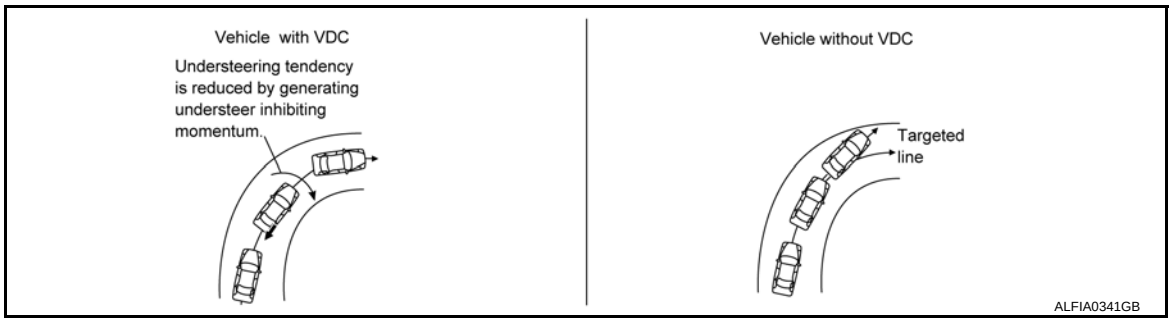


VDC Function That Prevents Tendency

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



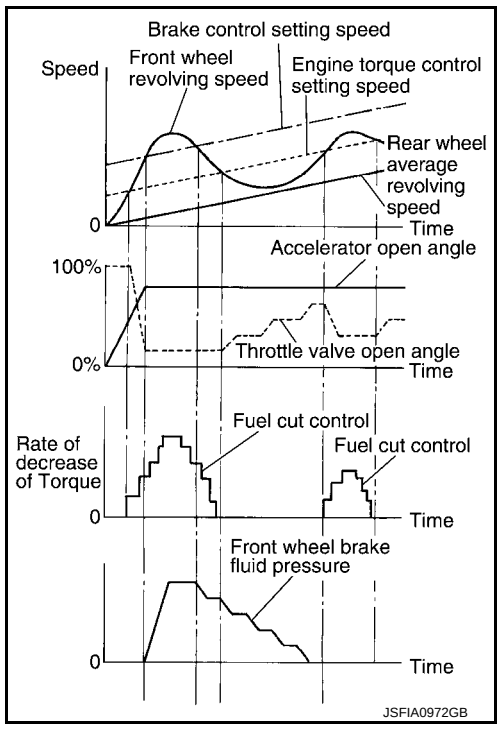
- Applying braking during a cornering on a slippery road, when understeer tendency is judged large, engine output is controlled as well as brake force (brake fluid pressure) of four wheels. Understeer tendency decreases.



TCS FUNCTION

TCS FUNCTION : System Description

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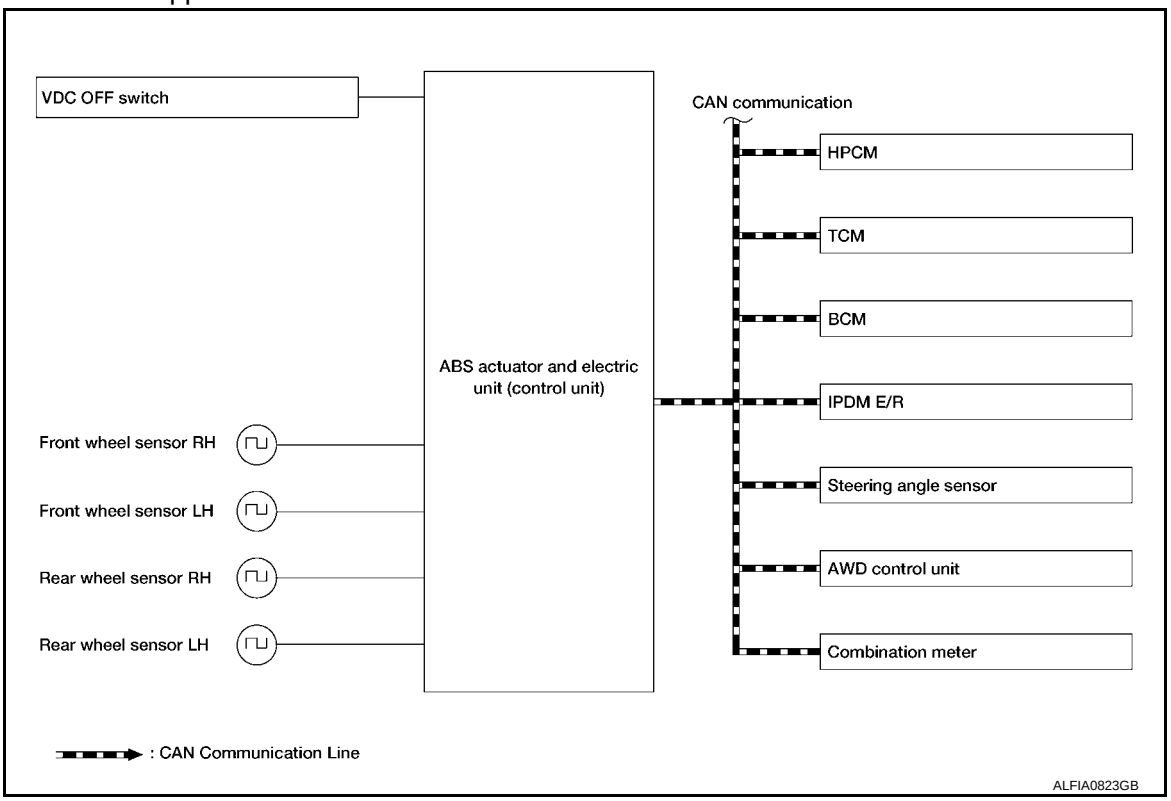


- Wheel spin status of drive wheel is detected by wheel sensor of 4 wheels. Engine output and transmission shift status is controlled so that slip rate of drive wheels is in appropriate level. When wheel spin occurs on drive wheel, ABS actuator and electric unit (control unit) perform brake force control of LH and RH drive wheels (apply brake force by increasing brake fluid pressure of drive wheel) and decrease 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, brake force distribution function, hill start assist function, active trace control function (control of chassis control module) and active ride control function (control of chassis control module). The vehicle status becomes the same as models without VDC function, TCS function, brake assist function, brake force distribution function, hill start assist function, active trace control function (control of chassis control module) and active ride control function (control of chassis control module). However, ABS function and EBD function are operated normally. Refer to BRC-28, "Fail-safe".

SYSTEM DIAGRAM

NOTE:

AWD control unit is applied to AWD models.



INPUT SIGNAL AND OUTPUT SIGNAL

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

Component parts	Signal description
Combination meter	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Parking brake switch signal • Brake fluid level switch signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication. • ABS warning lamp signal • VDC OFF indicator signal • VDC warning lamp signal • Brake system warning lamp signal • Brake warning lamp signal
TCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • N range signal • P range signal • R range signal • Current gear position signal • Shift position signal • TCM malfunction signal
HPCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Accelerator pedal position signal • Engine speed signal • Engine status signal • HPCM status signal • Current regenerative torque signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication. • Cooperative regenerative practicable torque signal • Braking force signal

Component parts	Signal description
IPDM E/R	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Ignition switch ON signal
BCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Stop lamp switch signal • Brake pedal position switch signal • Cranking signal • Ignition switch ON signal
AWD control unit*	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • AWD malfunction signal • AWD operation signal
Steering angle sensor	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Steering angle sensor signal

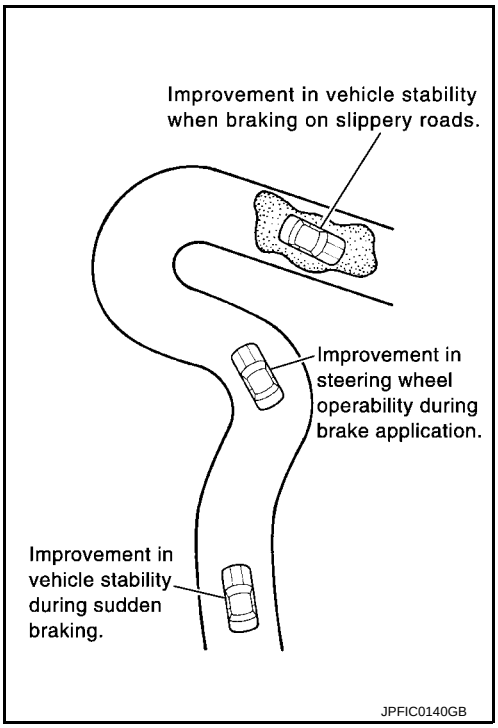
*: AWD models

ABS FUNCTION

ABS FUNCTION : System Description

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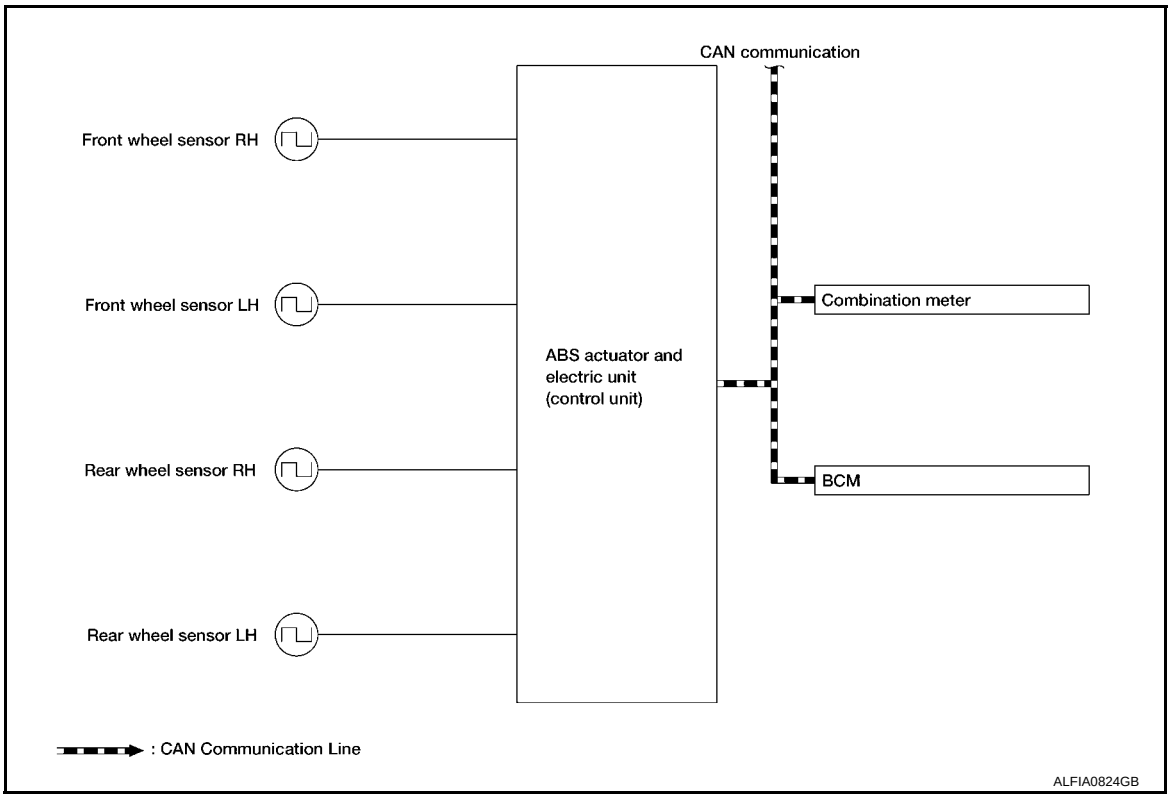
- By preventing wheel lock through brake force (brake fluid pressure) control that is electronically controlled by detecting wheel speed during braking, stability during emergency braking is improved so that obstacles can be easily bypassed by steering operation.
- During braking, control units calculates 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, brake assist function, brake force distribution function, hill start assist function, active trace control function (control of chassis control module) and active ride control function (control of chassis control module). The vehicle status becomes the same as models without VDC function, TCS function, ABS function, brake assist function, brake force distribution function, hill start assist function, active trace control function (control of chassis control module) and active ride control function (control of chassis control module). However, EBD function is operated normally. Refer to BRC-28, "Fail-safe".



NOTE:

- ABS function has the characteristic as described here, This is not the 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 when 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 addition, brake pedal may be felt heavy when depressing brake pedal lightly. These symptoms are not malfunctions.

SYSTEM DIAGRAM



INPUT SIGNAL AND OUTPUT SIGNAL

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

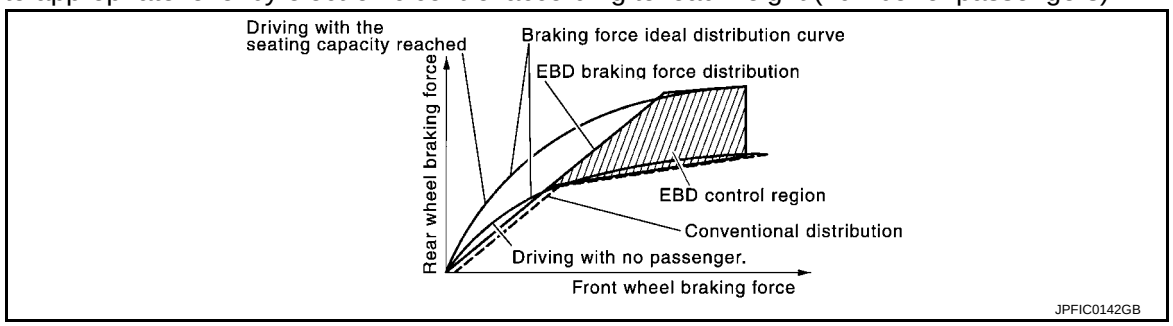
Component parts	Signal description
Combination meter	Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication. • VDC warning lamp signal • ABS warning lamp signal
BCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Stop lamp switch signal

EBD FUNCTION

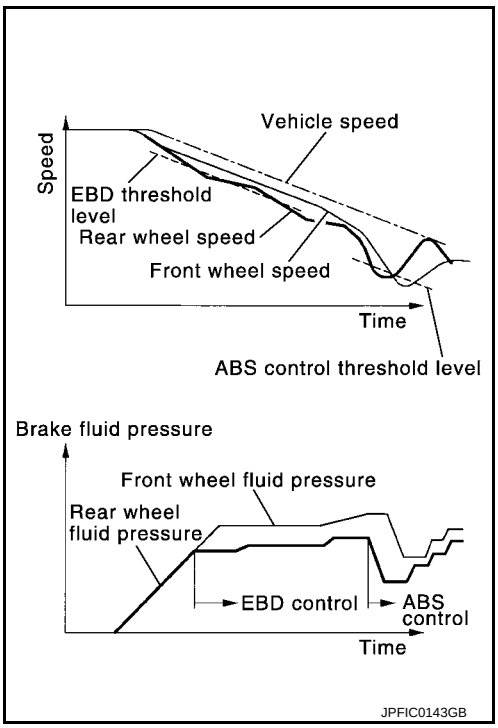
EBD FUNCTION : System Description

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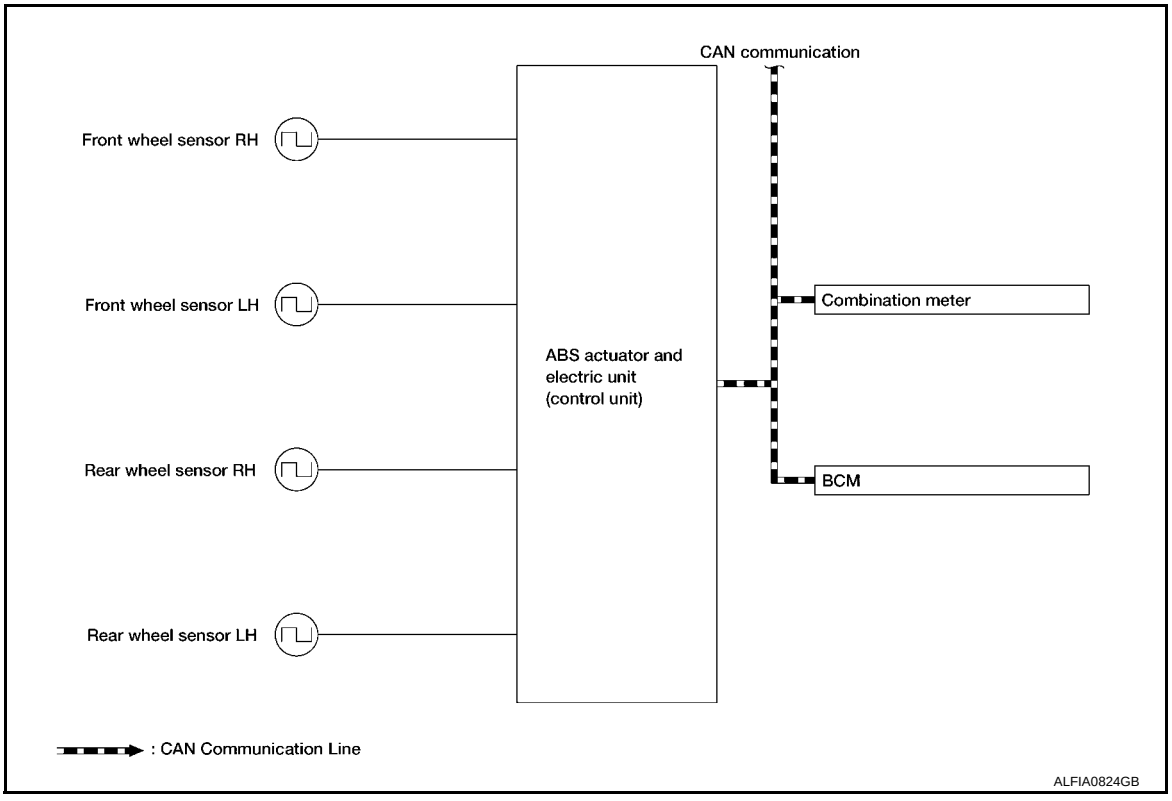
- By preventing rear wheel slip increase through rear wheel brake force (brake fluid pressure) control that is electronically controlled when slight skip on front and rear wheels are detected during braking, stability during braking is improved.
- EBD function is expanded and developed from conventional 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, brake force distribution function, hill start assist function, active trace control function (control of chassis control module) and active ride control function (control of chassis control module). The vehicle status becomes the same as models without VDC function, TCS function, ABS function, EBD function, brake assist function, brake force distribution function, hill start assist function, active trace control function (control of chassis control module) and active ride control function (control of chassis control module). Refer to BRC-28, "Fail-safe".



SYSTEM DIAGRAM



INPUT SIGNAL AND OUPUT SIGNAL

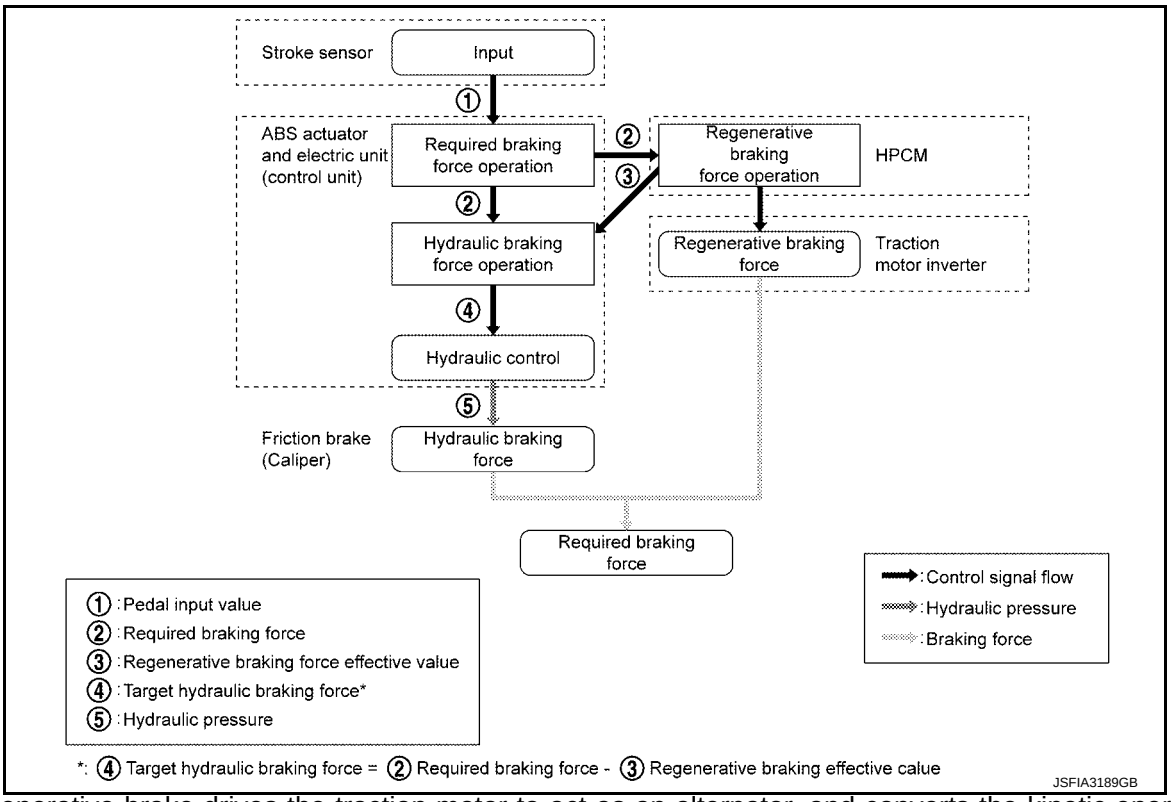
Major signal transmission between each unit via communication lines is shown in the following table.

Component parts	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
BCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Stop lamp switch signal

COOPERATIVE REGENERATIVE BRAKE FUNCTION

COOPERATIVE REGENERATIVE BRAKE FUNCTION : System Description

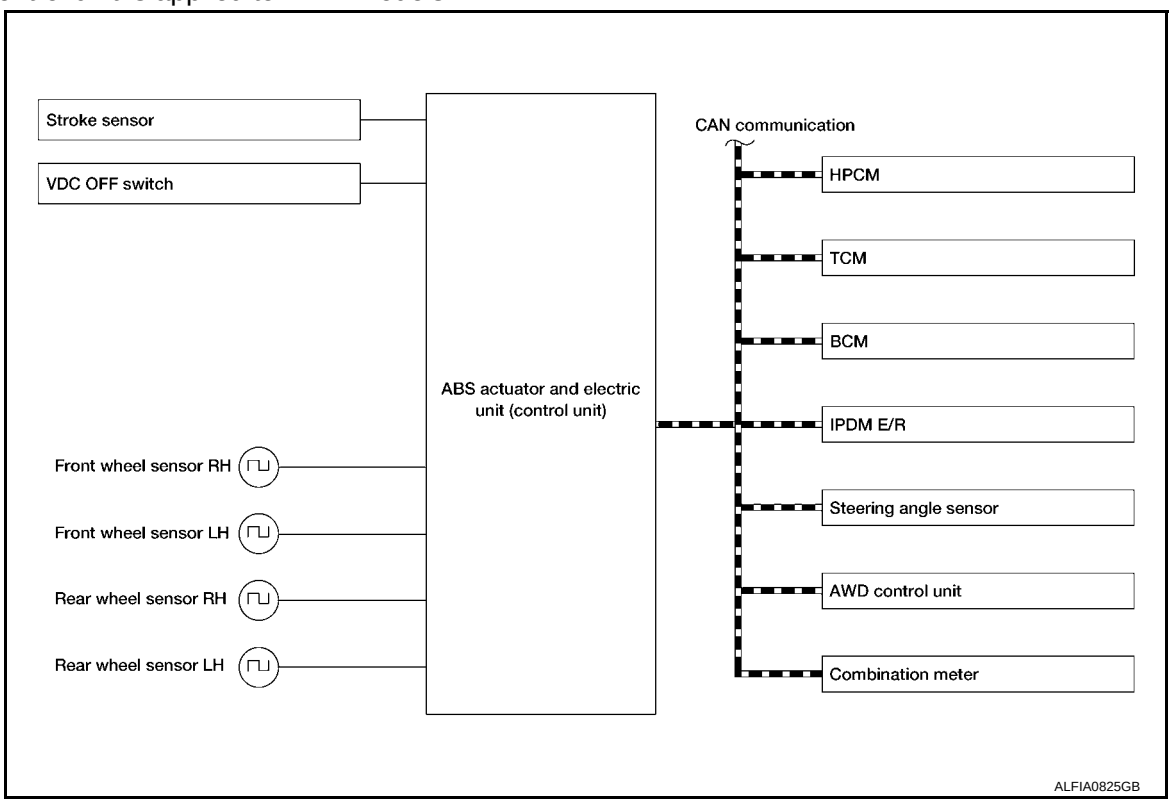
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- A regenerative brake drives the traction motor to act as an alternator, and converts the kinetic energy produced by rotation of the tires into electrical energy. The converted electrical energy charges the Li-ion battery. In the same way as engine braking, this can also reduce the load on the ordinary brakes.
- When the brakes are operated (during driving), the ABS actuator and electric unit (control unit) calculates the required braking force based on the input value from the stroke sensor (indicating the amount of brake pedal operation), and it sends the result to the HPCM. At the same time, it calculates the hydraulic braking force needed to produce the required braking force.
- HPCM calculates the regenerative braking force needed to produce the required braking force, and it sends the result to the ABS actuator and electric unit (control unit). At the same time, HPCM uses the traction motor inverter to perform regenerative braking.
- ABS actuator and electric unit (control unit) calculates the hydraulic braking force again based on the regenerative braking force result from the HPCM and the calculated result for hydraulic braking force.
- Based on the calculated result for hydraulic braking force, ABS actuator and electric unit (control unit) adjusts the fluid pressure that is actually applied matches the target fluid pressure to the target fluid pressure.
- When immediately before vehicle stops or while vehicle is stopped, cooperative regenerative brake control is not performed.

SYSTEM DIAGRAM

NOTE:
AWD control unit is applied to AWD models.



INPUT SIGNAL AND OUTPUT SIGNAL

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

Component parts	Signal description
Combination meter	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Parking brake switch signal • Brake fluid level switch signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication. • ABS warning lamp signal • VDC OFF indicator signal • VDC warning lamp signal • Brake system warning lamp signal • Brake warning lamp signal
TCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • N range signal • P range signal • R range signal • Current gear position signal • Shift position signal • TCM malfunction signal
HPCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Accelerator pedal position signal • Engine speed signal • Engine status signal • HPCM status signal • Current regenerative torque signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication. • Cooperative regenerative practicable torque signal • Braking force signal

Component parts	Signal description
IPDM E/R	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Ignition switch ON signal
BCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Stop lamp switch signal • Brake pedal position switch signal • Cranking signal • Ignition switch ON signal
AWD control unit*	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • AWD malfunction signal • AWD operation signal
Steering angle sensor	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Steering angle sensor signal

*: AWD models

BRAKE ASSIST FUNCTION

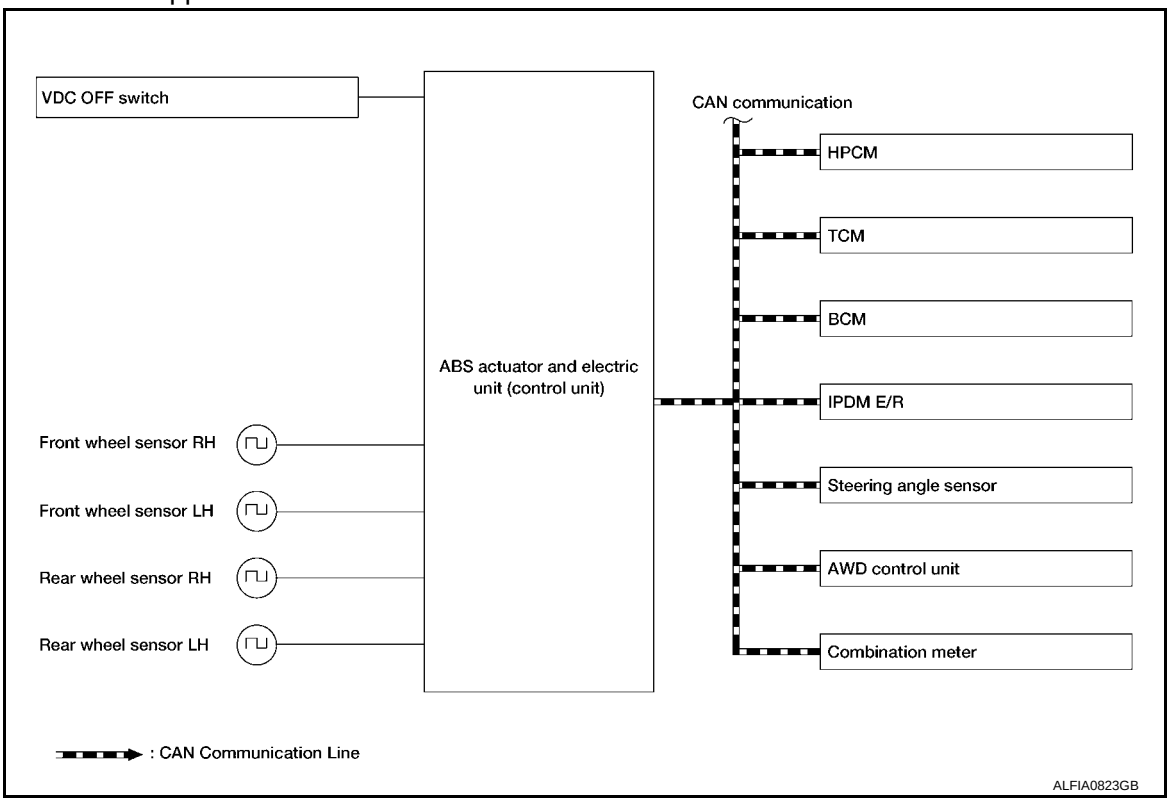
BRAKE ASSIST FUNCTION : System Description

INFOID:0000000014895568

- 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, brake force distribution function, hill start assist function, active trace control function (control of chassis control module) and active ride control function (control of chassis control module). The vehicle status becomes the same as models without VDC function, TCS function, brake assist function, brake force distribution function, hill start assist function, active trace control function (control of chassis control module) and active ride control function (control of chassis control module). However, ABS function and EBD function are operated normally. Refer to BRC-28, "Fail-safe".

SYSTEM DIAGRAM

NOTE:
AWD control unit is applied to AWD models.



INPUT SIGNAL AND OUTPUT SIGNAL

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

Component parts	Signal description
Combination meter	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Parking brake switch signal • Brake fluid level switch signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication. • ABS warning lamp signal • VDC OFF indicator signal • VDC warning lamp signal • Brake system warning lamp signal • Brake warning lamp signal
TCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • N range signal • P range signal • R range signal • Current gear position signal • Shift position signal • TCM malfunction signal
HPCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Accelerator pedal position signal • Engine speed signal • Engine status signal • HPCM status signal • Current regenerative torque signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication. • Cooperative regenerative practicable torque signal • Braking force signal
IPDM E/R	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Ignition switch ON signal
BCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Stop lamp switch signal • Brake pedal position switch signal • Cranking signal • Ignition switch ON signal
AWD control unit*	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • AWD malfunction signal • AWD operation signal
Steering angle sensor	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Steering angle sensor signal

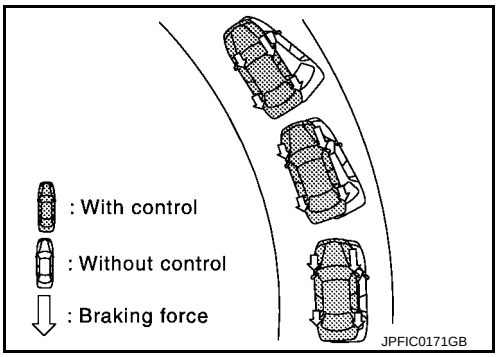
*: AWD models

BRAKE FORCE DISTRIBUTION FUNCTION

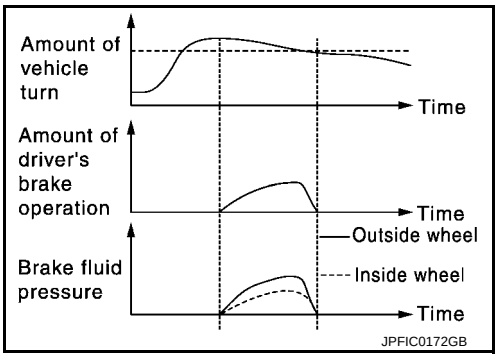
BRAKE FORCE DISTRIBUTION FUNCTION : System Description

INFOID:0000000014895569

- Brake force distribution function helps provide a more stable and secure feeling.



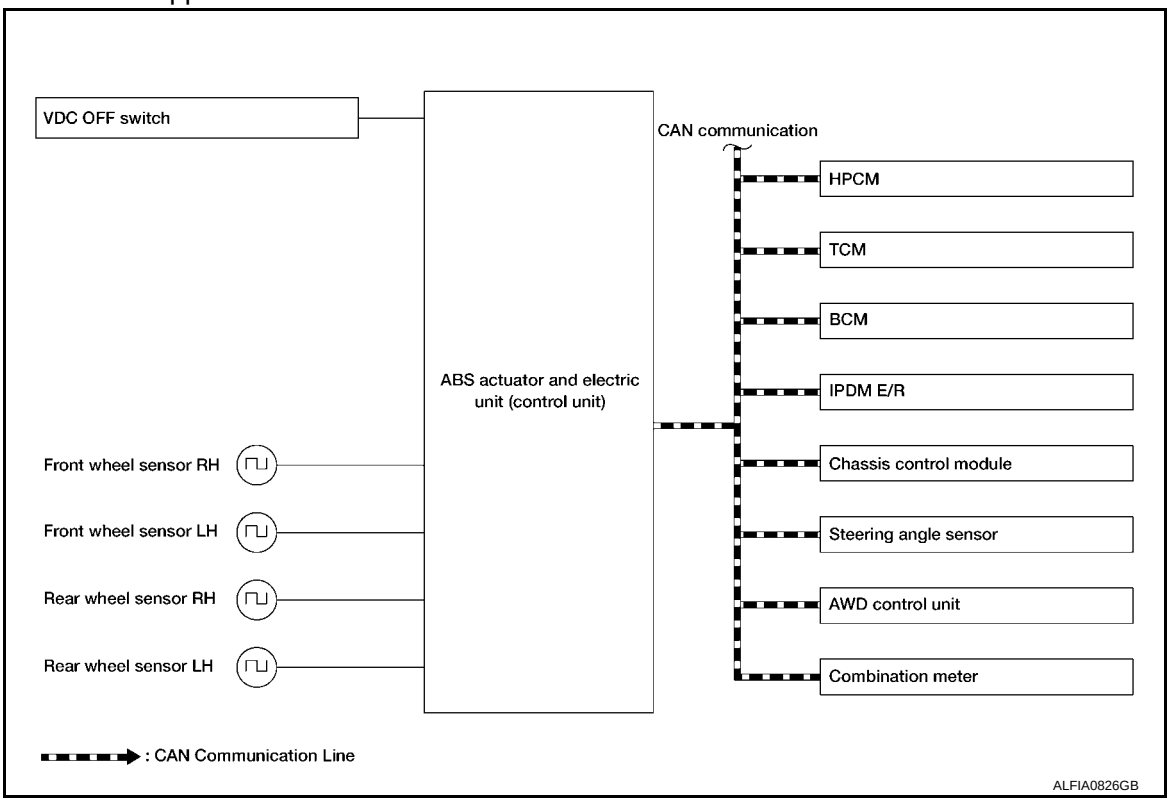
- During cornering, when brake operation is performed brake fluid pressure of each wheel is controlled based on steering operation amount by the driver and vehicle cornering status amount detected by each sensor.
- Fail-safe function is adopted. When a malfunction occurs in brake force distribution function, the control is suspended for VDC function, TCS function, brake assist function, brake force distribution function, hill start assist function, active trace control function (control of chassis control module) and active ride control function (control of chassis control module). The vehicle status becomes the same as models without VDC function, TCS function, brake assist function, brake force distribution function, hill start assist function, active trace control function (control of chassis control module) and active ride control function (control of chassis control module). However ABS function and EBD function are operated normally. Refer to BRC-28, "Fail-safe".



NOTE:
Brake force distribution function may not always be operates in all driving conditions.

SYSTEM DIAGRAM

NOTE:
AWD control unit is applied to AWD models.



INPUT SIGNAL AND OUTPUT SIGNAL

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

Component parts	Signal description
Combination meter	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Parking brake switch signal • Brake fluid level switch signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication. • ABS warning lamp signal • VDC OFF indicator signal • VDC warning lamp signal • Brake system warning lamp signal • Brake warning lamp signal
TCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • N range signal • P range signal • R range signal • Current gear position signal • Shift position signal • TCM malfunction signal
HPCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Accelerator pedal position signal • Engine speed signal • Engine status signal • HPCM status signal • Current regenerative torque signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication. • Cooperative regenerative practicable torque signal • Braking force signal
IPDM E/R	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Ignition switch ON signal
BCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Stop lamp switch signal • Brake pedal position switch signal • Cranking signal • Ignition switch ON signal
Chassis control module	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Active trace control signal • Active ride control signal
AWD control unit*	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • AWD malfunction signal • AWD operation signal
Steering angle sensor	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Steering angle sensor signal

*: AWD models

hill start assist FUNCTION

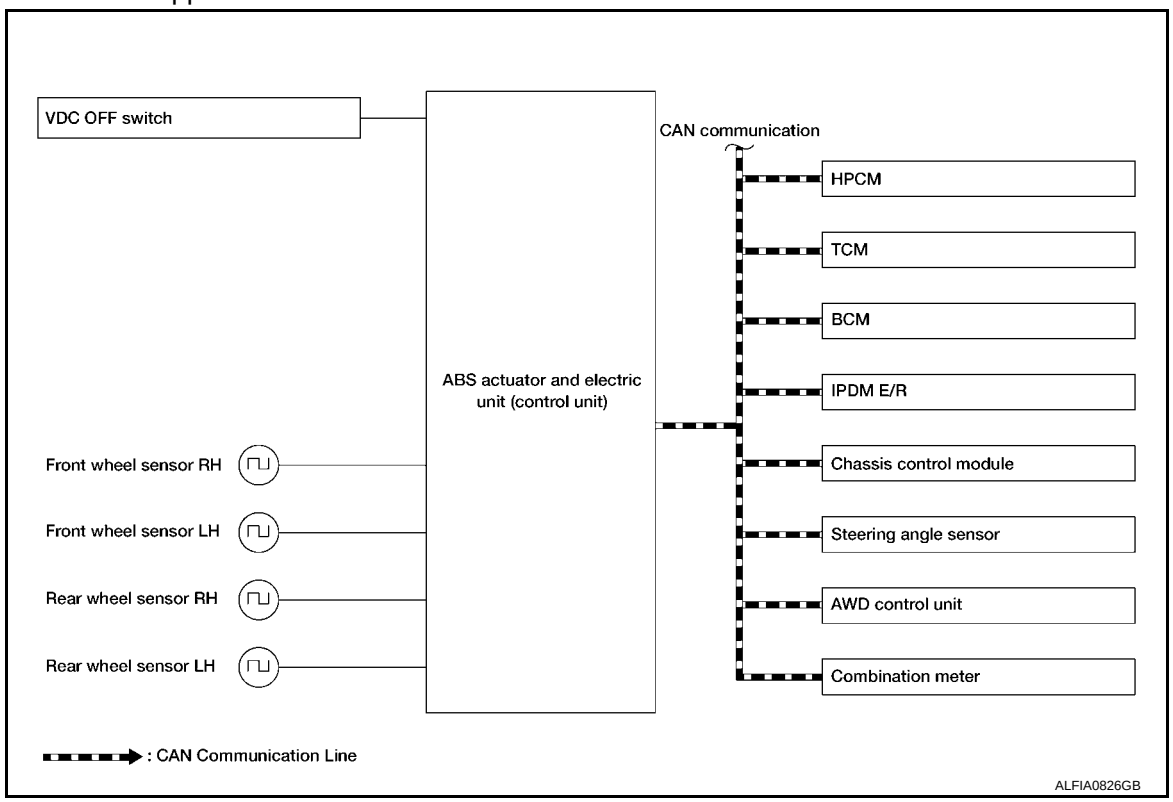
hill start assist FUNCTION : System Description

INFOID:0000000014895570

- This function maintains brake fluid pressure so that the vehicle does not move backwards 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 an uphill slope of slope ratio 10% or more and selector lever is in the position other than P or N.
- hill start assist function is only for the start aid. It maintains the brake fluid pressure for approx. 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, does not turn ON or blink the hill start assist indicator lamp on the combination meter, the control is suspended for VDC function, TCS function, brake assist function, brake force distribution function, hill start assist function, active trace control function (control of chassis control module) and active ride control function (control of chassis control module). The vehicle status becomes the same as models without VDC function, TCS function, brake assist function, brake force distribution function, hill start assist function, active trace control function (control of chassis control module) and active ride control function (control of chassis control module). However, ABS function and EBD function are operated normally. Refer to BRC-28, "Fail-safe".

SYSTEM DIAGRAM

NOTE:
AWD control unit is applied to AWD models.



INPUT SIGNAL AND OUTPUT SIGNAL

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

Component parts	Signal description
Combination meter	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Parking brake switch signal • Brake fluid level switch signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication. • ABS warning lamp signal • VDC OFF indicator signal • VDC warning lamp signal • Brake system warning lamp signal • Brake warning lamp signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via chassis control module via CAN communication. • hill start assist display request signal
TCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • N range signal • P range signal • R range signal • Current gear position signal • Shift position signal • TCM malfunction signal
HPCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Accelerator pedal position signal • Engine speed signal • Engine status signal • HPCM status signal • Current regenerative torque signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication. • Cooperative regenerative practicable torque signal • Braking force signal
IPDM E/R	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Ignition switch ON signal
BCM	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Stop lamp switch signal • Brake pedal position switch signal • Cranking signal • Ignition switch ON signal
Chassis control module	Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication. • hill start assist display request signal Mainly transmits the following signals to combination meter via CAN communication. • hill start assist display request signal
AWD control unit*	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • AWD malfunction signal • AWD operation signal
Steering angle sensor	Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Steering angle sensor signal

*: AWD models

INFORMATION DISPLAY (COMBINATION METER)

INFORMATION DISPLAY (COMBINATION METER) : Chassis Control Display

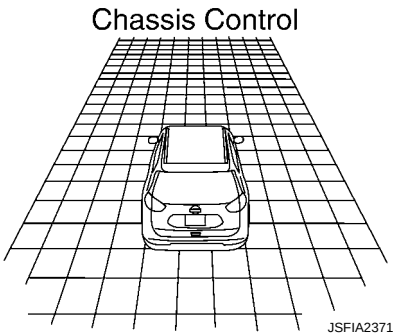
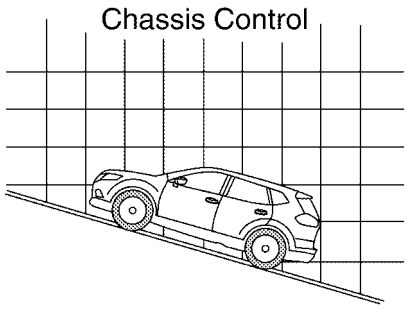
INFOID:0000000014895572

DESIGN/PURPOSE

- hill start assist function information is displayed on the information display.

System Information

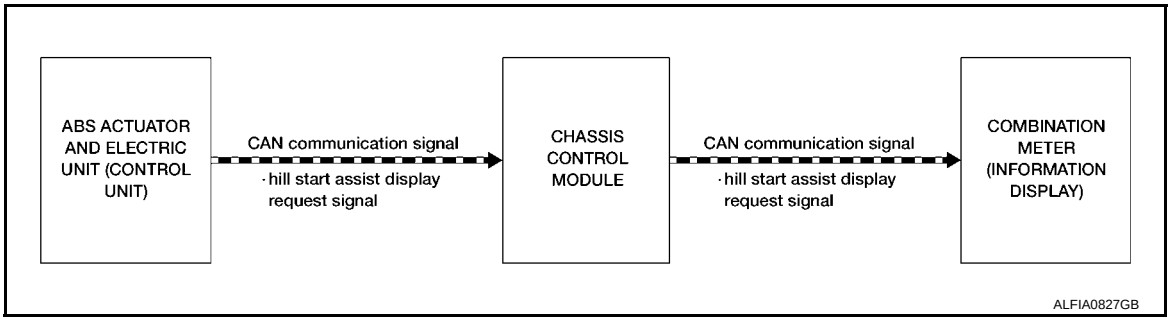
hill start assist function

Design	Description
 JSFIA2371ZZ	hill start assist function operation condition is not satisfied
 JSFIA2372ZZ	• Not blinking (tire): hill start assist function operation condition is satisfied (not operating) • Blinking (tire): hill start assist function is operating

SYNCHRONIZATION WITH MASTER WARNING LAMP

Not applicable

SYSTEM DIAGRAM



SIGNAL PATH

hill start assist Function

- The ABS actuator and electric unit (control unit) transmits a hill start assist display request signal to the chassis control module via CAN communication when operating status in the hill assist function.
- The chassis control module receiving a hill start assist display request signal, and transmits a hill start assist display request signal to the combination meter via CAN communication.
- The combination meter shows the chassis control display on the information display, according to the signal.

WARNING/INDICATOR/CHIME LIST

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

INFOID:0000000014895573

Name	Design	Layout/Function
ABS warning lamp		For layout: Refer to MWI-6, "METER SYSTEM : Design". For function: Refer to BRC-47, "WARNING/INDICATOR/CHIME LIST : Warning Lamp/Indicator Lamp".
VDC warning lamp		For layout: Refer to MWI-6, "METER SYSTEM : Design". For function: Refer to BRC-47, "WARNING/INDICATOR/CHIME LIST : Warning Lamp/Indicator Lamp".
Brake system warning lamp (yellow)		For layout: Refer to MWI-6, "METER SYSTEM : Design". For function: Refer to BRC-47, "WARNING/INDICATOR/CHIME LIST : Warning Lamp/Indicator Lamp".
Brake warning lamp (red)		For layout: Refer to MWI-6, "METER SYSTEM : Design". For function: Refer to BRC-47, "WARNING/INDICATOR/CHIME LIST : Warning Lamp/Indicator Lamp".
VDC OFF indicator lamp		For layout: Refer to MWI-6, "METER SYSTEM : Design". For function: Refer to BRC-47, "WARNING/INDICATOR/CHIME LIST : Warning Lamp/Indicator Lamp".

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

CONSULT Function

INFOID:0000000014895574

APPLICATION ITEMS

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

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

*: 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-61, "DTC Index".

When “PRSNT” is displayed on self-diagnosis result.
- The system is presently malfunctioning.

When “PAST” is displayed on self-diagnosis result.
- System malfunction in the past is detected, but the system is presently normal.

FREEZE FRAME DATA (FFD)

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

Item name	Display Item
IGN counter (0 – 39)	The number of times that power 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 is detected, but the system is presently normal. **NOTE:** Each time when power switch is turned OFF to ON, numerical number increases in 1→2→3...38→39. When the operation number of times exceeds 39, the number do not increase and “39” is displayed until self diagnosis is erased.

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.

×: Applicable

Item (Unit)	Monitor item selection		Note
	ECU INPUT SIGNALS	MAIN SIGNALS	
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.

Item (Unit)	Monitor item selection		Note
	ECU INPUT SIGNALS	MAIN SIGNALS	
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 (G)	×	×	Decel G detected by decel G sensor is displayed.
FR RH IN SOL*1 (On/Off)		×	Operation status of front RH wheel ABS IN valve is displayed.
FR RH OUT SOL*1 (On/Off)		×	Operation status of front RH wheel ABS OUT valve is displayed.
FR LH IN SOL*1 (On/Off)		×	Operation status of front LH wheel ABS IN valve is displayed.
FR LH OUT SOL*1 (On/Off)		×	Operation status of front LH wheel ABS OUT valve is displayed.
RR RH IN SOL*1 (On/Off)		×	Operation status of rear RH wheel ABS IN valve is displayed
RR RH OUT SOL*1 (On/Off)		×	Operation status of rear RH wheel ABS OUT valve is displayed.
RR LH IN SOL*1 (On/Off)		×	Operation status of rear LH wheel ABS IN valve is displayed.
RR LH OUT SOL*1 (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. *2
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 *1 (On/Off)		×	ABS actuator relay status is displayed.
ABS WARN LAMP (On/Off)		×	ABS warning lamp status is displayed.
OFF LAMP (On/Off)		×	VDC OFF indicator lamp status is displayed.*2
SLIP/VDC LAMP (On/Off)		×	VDC warning lamp status is displayed.*2
BATTERY VOLT (V)	×	×	Voltage supplied to ABS actuator and electric unit (control unit) is displayed.
GEAR	×	×	Gear position determined by TCM.
YAW RATE SEN (d/s)	×	×	Yaw rate detected by yaw rate/side G sensor
R POSI SIG (On/Off)			R range signal input status judged from R range signal is displayed.
4WD MODE MON (2WD/4WD)	×	×	4WD control status is displayed.
N POSI SIG (On/Off)			N range signal input status judged from N range signal is displayed.
CV1*1 (On/Off)			Cut valve 1 operation status is displayed.

Item (Unit)	Monitor item selection		Note
	ECU INPUT SIGNALS	MAIN SIGNALS	
CV2[*1] (On/Off)			Cut valve 2 operation status is displayed.
ACCEL POS SIG (%)	×		Throttle actuator opening/closing is displayed (Linked with accelerator pedal)
SIDE G-SENSOR (m/s^2)	×		Transverse G detected by yaw rate/side G sensor
STR ANGLE SIG (deg)	×		Steering angle detected by steering angle sensor
PRESS SENSOR (bar)	×		Brake fluid pressure detected by pressure sensor
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)			Crank operation status is displayed.
FLUID LEV SW (On/Off)	×		Brake fluid level switch signal status is displayed.
USS SIG[*3] (On/Off)			Operation status of hill start assist function is displayed.
BRK PEDAL STROKE SEN 1 (V)			Stroke sensor 1[*4] output voltage is displayed.
BRK PEDAL STROKE SEN 2 (V)			Stroke sensor 2[*4] output voltage is displayed.
BRAKE PEDAL STROKE 1 (mm)			Stroke sensor 1[*4] stroke is displayed.
BRAKE PEDAL STROKE 2 (mm)			Stroke sensor 2[*4] stroke is displayed.
REGENERATIVE TORQUE (Nm)			Current regenerative torque value is displayed.
REGENE TORQUE REQ (Nm)			Regenerative torque command value is displayed.
TARGET BRAKING FORCE (N)			Target brake force value is displayed.
REGENE SYNCHRO FLAG (On/Off)			Operation status of regenerative cooperative brake function is displayed.
REGENE MALFUNC FLAG (On/Off)			Malfunction status of regenerative cooperative brake function is displayed.

*1: Display occasionally changes On/Off for a moment after ignition switch is turned ON. This is operation for checking purposes and is not a malfunction.
*2: Refer to BRC-17, "System Description" for ON/OFF conditions of each warning lamp.
*3: “USS” means “hill start assist” or “Uphill Start Support”.
*4: The stroke sensor is composed of two circuits: stroke sensor 1 and stroke sensor 2.

ACTIVE TEST

The active test is used to determine and identify details of a malfunction, based on self-diagnosis test result sand 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 approx. 10 seconds after operation start.
- When performing active test again after “TEST IS STOPPED” is displayed, select “BACK”.
- ABS warning lamp and brake 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 Item	Display		
		Up	Keep	Down
FR RH SOL	FR RH IN SOL	Off	On*	On*
	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 approx. 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	Display Item	Display		
		Up	ACT Up	ACT KEEP
FR RH ABS SOLENOID (ACT)	FR RH IN SOL	Off	Off	Off
	FR RH OUT SOL	Off	Off	Off
	CV1	Off	On*	On*
	CV2	Off	Off	Off
FR LH ABS SOLENOID (ACT)	FR LH IN SOL	Off	Off	Off
	FR LH OUT SOL	Off	Off	Off
	CV1	Off	Off	Off
	CV2	Off	On*	On*

Test item	Display Item	Display		
		Up	ACT Up	ACT KEEP
RR RH ABS SOLENOID (ACT)	RR RH IN SOL	Off	Off	Off
	RR RH OUT SOL	Off	Off	Off
	CV1	Off	Off	Off
	CV2	Off	On*	On*
RR LH ABS SOLENOID (ACT)	RR LH IN SOL	Off	Off	On
	RR LH OUT SOL	Off	Off	Off
	CV1	Off	On*	On*
	CV2	Off	Off	Off

*: Immediately after being selected, status is “On”. Status changes to “Off” after approx. 2 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	
		On	Off
ABS MOTORL	MOTOR RELAY	On	Off
	ACTUATOR RLY*	On	On

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

WORK SUPPORT

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

RE/PROGRAMMING, CONFIGURATION

Configuration includes the following functions.

Function		Description
Read/Write Configuration	Before replacing ECU	• Allows the reading of vehicle specification (Type ID) written in ABS actuator and electric unit (control unit). • Allows the reading of vehicle specification (Type ID) store 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).
Manual Configuration		Allows the writing of vehicle specification (Type ID) into the ABS actuator and electric unit (control unit) by hand.

ECU DIAGNOSIS INFORMATION

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Reference Value

INFOID:0000000014895575

CONSULT DATA MONITOR STANDARD VALUE

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	Reference values in normal operation
FR LH SENSOR	Vehicle stopped	0.00 km/h (MPH)
	When driving*1	Nearly matches the speedometer display (within ±10%)
FR RH SENSOR	Vehicle stopped	0.00 km/h (MPH)
	When driving*1	Nearly matches the speedometer display (within ±10%)
RR LH SENSOR	Vehicle stopped	0.00 km/h (MPH)
	When driving*1	Nearly matches the speedometer display (within ±10%)
RR RH SENSOR	Vehicle stopped	0.00 km/h (MPH)
	When driving*1	Nearly matches the speedometer display (within ±10%)
DECEL G-SEN	Vehicle stopped	Approx. 0 G
	During acceleration	Positive value
	During deceleration	Negative value
FR RH IN SOL*2	Active	On
	Inactive	Off
FR RH OUT SOL*2	Active	On
	Inactive	Off
FR LH IN SOL*2	Active	On
	Inactive	Off
FR LH OUT SOL*2	Active	On
	Inactive	Off
RR RH IN SOL*2	Active	On
	Inactive	Off
RR RH OUT SOL*2	Active	On
	Inactive	Off
RR LH IN SOL*2	Active	On
	Inactive	Off
RR LH OUT SOL*2	Active	On
	Inactive	Off
EBD WARN LAMP	When brake warning lamp is ON*3	On
	When brake warning lamp is OFF*3	Off
STOP LAMP SW	Brake pedal depressed	On
	Brake pedal not depressed	Off
MOTOR RELAY	Active	On
	Inactive	Off

Monitor item	Condition	Reference values in normal operation
ACTUATOR RLY *2	Active	On
	Inactive (in fail-safe mode)	Off
ABS WARN LAMP	When ABS warning lamp is ON*3	On
	When ABS warning lamp is OFF*3	Off
OFF LAMP	When VDC OFF indicator lamp is ON*3	On
	When VDC OFF indicator lamp is OFF*3	Off
SLIP/VDC LAMP	When VDC warning lamp is ON*3	On
	When VDC warning lamp is OFF*3	Off
BATTERY VOLT	Ignition switch ON	10 – 16 V
GEAR	When driving	Depending on gear status
YAW RATE SEN	Vehicle stopped	Approx. 0 d/s
	Vehicle turning right	Negative value
	Vehicle turning left	Positive value
R POSI SIG	When selector lever is in the R position	On
	When selector lever is in the other position than R	Off
4WD MODE MON	When 4WD mode is 2WD mode	2WD
	When 4WD mode is 4WD mode	4WD
N POSI SIG	When selector lever is in the N position	On
	When selector lever is in the other position than N	Off
CV1*2	Active	On
	Inactive	Off
CV2*2	Active	On
	Inactive	Off
ACCEL POS SIG	Accelerator pedal not depressed (ignition switch is ON)	0%
	Depress accelerator pedal (ignition switch is ON)	0 – 100%
SIDE G-SENSOR	Vehicle stopped	Approx. 0 m/s^2
	Vehicle turning right	Negative value
	Vehicle turning left	Positive value
STR ANGLE SIG	Driving straight	±2.5 deg
	Turn 90° to right	Approx. +90 deg
	Turn 90° to left	Approx. −90 deg
PRESS SENSOR	With ignition switch turned ON and brake pedal released	Approx. 0 bar
	With ignition switch turned ON and brake pedal depressed	−40 to 300 bar
EBD SIGNAL	EBD is active	On
	EBD is inactive	Off
ABS SIGNAL	ABS is active	On
	ABS is inactive	Off
TCS SIGNAL	TCS is active	On
	TCS is inactive	Off
VDC SIGNAL	VDC is active	On
	VDC is inactive	Off

Monitor item	Condition	Reference values in normal operation
EBD FAIL SIG	In EBD fail-safe	On
	EBD is normal	Off
ABS FAIL SIG	In ABS fail-safe	On
	ABS is normal	Off
TCS FAIL SIG	In TCS fail-safe	On
	TCS is normal	Off
VDC FAIL SIG	In VDC fail-safe	On
	VDC is normal	Off
CRANKING SIG	Crank is active	On
	Crank is inactive	Off
FLUID LEV SW	When brake fluid level switch ON	On
	When brake fluid level switch OFF	Off
USS SIG*4	When hill start assist function is active	On
	When hill start assist function is inactive	Off
BRK PEDAL STROKE SEN 1	Brake pedal is operated/released	0.73 – 4.3 V
BRK PEDAL STROKE SEN 2	Brake pedal is operated/released	0.73 – 4.3 V
BRAKE PEDAL STROKE 1	Brake pedal is operated/released	Brake pedal stroke detected by stroke sensor 1*5 is displayed. (mm)
BRAKE PEDAL STROKE 2	Brake pedal is operated/released	Brake pedal stroke detected by stroke sensor 2*5 is displayed. (mm)
REGENERATIVE TORQUE	Regenerative cooperative brake function is active	Current regenerative torque received from HPCM via CAN communication is displayed. (Nm)
REGENE TORQUE REQ	Regenerative cooperative brake function is active	Regenerative torque transmitted to HPCM via CAN communication is displayed. (Nm)
TARGET BRAKING FORCE	Regenerative cooperative brake function is active	Target brake force according to driver operation is displayed. (N)
REGENE SYNCHRO FLAG	Regenerative cooperative brake function is active	On
	Regenerative cooperative brake function is not active	Off
REGENE MALFUNC FLAG	Regenerative cooperative brake function is not normal	On
	Regenerative cooperative brake function is normal	Off

*1: Confirm tire pressure is standard value.
*2: Display occasionally changes On/Off for a moment after ignition switch is turned ON. This is operation for checking purposes and is not a malfunction.
*3: Refer to BRC-17, "System Description" for ON/OFF conditions of each warning lamp.
*4: “USS” means “hill start assist” or “Uphill Start Support”.
*5: The stroke sensor contains two circuits: stroke sensor 1 and stroke sensor 2.

Fail-safe

INFOID:0000000014895576

VDC FUNCTION, TCS FUNCTION, BRAKE LIMITED SLIP DIFFERENTIAL (BLSD) FUNCTION, BRAKE ASSIST FUNCTION, BRAKE FORCE DISTRIBUTION FUNCTION and hill start assist FUNCTION

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 limited slip differential (BLSD) function, brake assist function, brake force distribution function, hill start assist function and active trace control function (control of chassis control module) and active ride control function (control of chassis control module). The vehicle status becomes the same as models without VDC function, TCS function, brake

limited slip differential (BLSD) function, brake assist function, brake force distribution function, hill start assist function and active trace control function (control of chassis control module) and active ride control function (control of chassis control module). 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 limited slip differential (BLSD) function, brake assist function, brake force distribution function, hill start assist function and active trace control function (control of chassis control module) and active ride control function (control of chassis control module). The vehicle status becomes the same as models without VDC function, TCS function, ABS function, brake limited slip differential (BLSD) function, brake assist function, brake force distribution function, hill start assist function and active trace control function (control of chassis control module) and active ride control function (control of chassis control module). 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 limited slip differential (BLSD) function, brake assist function, brake force distribution function, hill start assist function and active trace control function (control of chassis control module) and active ride control function (control of chassis control module). The vehicle status becomes the same as models without VDC function, TCS function, ABS function, EBD function, brake limited slip differential (BLSD) function, brake assist function, brake force distribution function, hill start assist function and active trace control function (control of chassis control module) and active ride control function (control of chassis control module).

DTC	Fail-safe condition
C1101 C1102 C1103 C1104 C1105 C1106 C1107 C1108	The following functions are suspended. • VDC function • TCS function • ABS function • EBD function (only when both 2 rear wheels are malfunctioning) • Brake limited slip differential (BLSD) function • Brake assist function • Brake force distribution function • hill start assist function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)
C1109	The following functions are suspended. • VDC function • TCS function • ABS function • EBD function • Brake limited slip differential (BLSD) function • Brake assist function • Brake force distribution function • hill start assist function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)
C1111	The following functions are suspended. • VDC function • TCS function • ABS function • Brake limited slip differential (BLSD) function • Brake assist function • Brake force distribution function • hill start assist function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)

DTC	Fail-safe condition
C1115	The following functions are suspended. • VDC function • TCS function • ABS function • EBD function • Brake limited slip differential (BLSD) function • Brake assist function • Brake force distribution function • hill start assist function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)
C1116	The following functions are suspended. • VDC function • TCS function • Brake limited slip differential (BLSD) function • Brake assist function • Brake force distribution function • hill start assist function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)
C1120 C1121 C1122 C1123 C1124 C1125 C1126 C1127	The following functions are suspended. • VDC function • TCS function • ABS function • EBD function • Brake limited slip differential (BLSD) function • Brake assist function • Brake force distribution function • hill start assist function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)
C1130	The following functions are suspended. • VDC function • TCS function • Brake limited slip differential (BLSD) function • Brake force distribution function • hill start assist function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)
C1140	The following functions are suspended. • VDC function • TCS function • ABS function • EBD function • Brake limited slip differential (BLSD) function • Brake assist function • Brake force distribution function • hill start assist function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)
C1142	The following functions are suspended. • VDC function • TCS function • Brake limited slip differential (BLSD) function • Brake assist function • hill start assist function • Brake force distribution function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)

DTC	Fail-safe condition
C1143 C1144	The following functions are suspended. • VDC function • TCS function • Brake limited slip differential (BLSD) function • hill start assist function • Brake force distribution function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)
C1145 C1146	The following functions are suspended. • VDC function • TCS function • ABS function*1 • Brake limited slip differential (BLSD) function • Brake assist function*1 • hill start assist function • Brake force distribution function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)
C1155	The following functions are suspended. • VDC function • TCS function • Brake limited slip differential (BLSD) function • Brake assist function • hill start assist function • Brake force distribution function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)
C1160	The following functions are suspended. • VDC function • TCS function • ABS function*1 • Brake limited slip differential (BLSD) function • Brake assist function*1 • hill start assist function • Brake force distribution function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)
C1164 C1165 C1170	The following functions are suspended. • VDC function • TCS function • ABS function • EBD function • Brake limited slip differential (BLSD) function • Brake assist function • Brake force distribution function • hill start assist function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)
C118C C1B63 C1B64 C1B65 C1B66	Cooperative regenerative brake function is suspended.

DTC	Fail-safe condition
C1B68	The following functions are suspended. • VDC function • TCS function • ABS function • Brake limited slip differential (BLSD) function • Brake assist function • Brake force distribution function • hill start assist function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)
U1000 U1010	The following functions are suspended. • VDC function • TCS function • ABS function*2 • EBD function*2 • Brake limited slip differential (BLSD) function • Brake assist function • Brake force distribution function • hill start assist function • Active trace control function (control of chassis control module) • Active ride control function (control of chassis control module)

*1: AWD models
*2: When a malfunction detected in CAN communication [between ABS actuator and electric unit (control unit) and chassis control module].

DTC Inspection Priority Chart

INFOID:0000000014895577

When multiple DTCs are displayed simultaneously, check one by one depending on the following priority list.

Priority	Detected item (DTC)
1	• U1000 CAN COMM CIRCUIT • U1010 CONTROL UNIT (CAN)
2	• C1170 VARIANT CODING
3	• C1130 ENGINE SIGNAL 1 • C1144 ST ANG SEN SIGNAL • C118C EV/HEV SYSTEM
4	• C1109 BATTERY VOLTAGE [ABNORMAL] • C1111 PUMP MOTOR • C1140 ACTUATOR RLY • C1B68 MOTOR VOLTAGE

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 • C1115 ABS SENSOR [ABNORMAL SIGNAL] • C1116 STOP LAMP SW • C1120 FR LH IN ABS SOL • C1121 FR LH OUT ABS SOL • C1122 FR RH IN ABS SOL • C1123 FR RH OUT ABS SOL • C1124 RR LH IN ABS SOL • C1125 RR LH OUT ABS SOL • C1126 RR RH IN ABS SOL • C1127 RR RH OUT ABS SOL • C1142 PRESS SEN CIRCUIT • C1143 ST ANG SEN CIRCUIT • C1145 YAW RATE SENSOR • C1146 SIDE G-SEN CIRCUIT • C1160 DECEL G SEN SET • C1164 CV 1 • C1165 CV 2 • C1B63 STROKE SENSOR SIGNAL • C1B64 STROKE SENSOR POWER SUPPLY • C1B65 STROKE SEN CALIB INCOMPLETE • C1B66 STROKE SENSOR INVALID
6	• C1155 BR FLUID LEVEL LOW

DTC Index

INFOID:0000000014895578

DTC	Items (CONSULT screen terms)	VDC warning lamp	ABS warning lamp	Brake warning lamp (red)	Brake system warning lamp (yellow)	Reference
C1101	RR RH SENSOR-1	ON	ON	ON*1	ON	BRC-86
C1102	RR LH SENSOR-1	ON	ON	ON*1	ON	
C1103	FR RH SENSOR-1	ON	ON	ON*1	ON	
C1104	FR LH SENSOR-1	ON	ON	ON*1	ON	
C1105	RR RH SENSOR-2	ON	ON	ON*1	ON	BRC-91
C1106	RR LH SENSOR-2	ON	ON	ON*1	ON	
C1107	FR RH SENSOR-2	ON	ON	ON*1	ON	
C1108	FR LH SENSOR-2	ON	ON	ON*1	ON	
C1109	BATTERY VOLTAGE [ABNORMAL]	ON	ON	ON	ON	BRC-99
C1111	PUMP MOTOR	ON	ON	ON	ON	BRC-101
C1115	ABS SENSOR [ABNORMAL SIGNAL]	ON	ON	ON	ON	BRC-104
C1116	STOP LAMP SW	ON	OFF	OFF	ON	BRC-112
C1120	FR LH IN ABS SOL	ON	ON	ON	ON	BRC-114
C1121	FR LH OUT ABS SOL	ON	ON	ON	ON	BRC-116
C1122	FR RH IN ABS SOL	ON	ON	ON	ON	BRC-114

DTC	Items (CONSULT screen terms)	VDC warning lamp	ABS warning lamp	Brake warning lamp (red)	Brake system warning lamp (yellow)	Reference
C1123	FR RH OUT ABS SOL	ON	ON	ON	ON	BRC-116
C1124	RR LH IN ABS SOL	ON	ON	ON	ON	BRC-114
C1125	RR LH OUT ABS SOL	ON	ON	ON	ON	BRC-116
C1126	RR RH IN ABS SOL	ON	ON	ON	ON	BRC-114
C1127	RR RH OUT ABS SOL	ON	ON	ON	ON	BRC-116
C1130	ENGINE SIGNAL 1	ON	OFF	OFF	ON	BRC-118
C1140	ACTUATOR RLY	ON	ON	ON	ON	BRC-120
C1142	PRESS SEN CIRCUIT	ON	OFF	OFF	ON	BRC-122
C1143	ST ANG SEN CIRCUIT	ON	OFF	OFF	OFF	BRC-125
C1144	ST ANG SEN SIGNAL	ON	OFF	OFF	OFF	BRC-129
C1145	YAW RATE SENSOR	ON	OFF	OFF	ON	BRC-131
C1146	SIDE G-SEN CIRCUIT	ON	OFF	OFF	ON	
C1155	BR FLUID LEVEL LOW	ON	OFF	OFF	ON	BRC-133
C1160	DECEL G SEN SET	ON	OFF*2 ON*3	OFF	ON	BRC-137
C1164	CV 1	ON	ON	ON	ON	BRC-139
C1165	CV 2	ON	ON	ON	ON	
C1170	VARIANT CODING	ON	ON	ON	ON	BRC-141
C118C	EV/HEV SYSTEM	OFF	OFF	OFF	ON	BRC-143
C1B63	STROKE SENSOR SIGNAL	OFF	OFF	ON	ON	BRC-145
C1B64	STROKE SENSOR POWER SUPPLY	OFF	OFF	ON	ON	BRC-150
C1B65	STROKE SEN CALIB INCOMPLETE	OFF	OFF	ON	ON	BRC-155
C1B66	STROKE SENSOR INVALID	OFF	OFF	ON	ON	BRC-157
C1B68	MOTOR VOLTAGE	ON	ON	ON	ON	BRC-162
U1000	CAN COMM CIRCUIT	ON	ON	ON	ON	BRC-165
U1010	CONTROL UNIT (CAN)	ON	ON	ON	ON	BRC-167

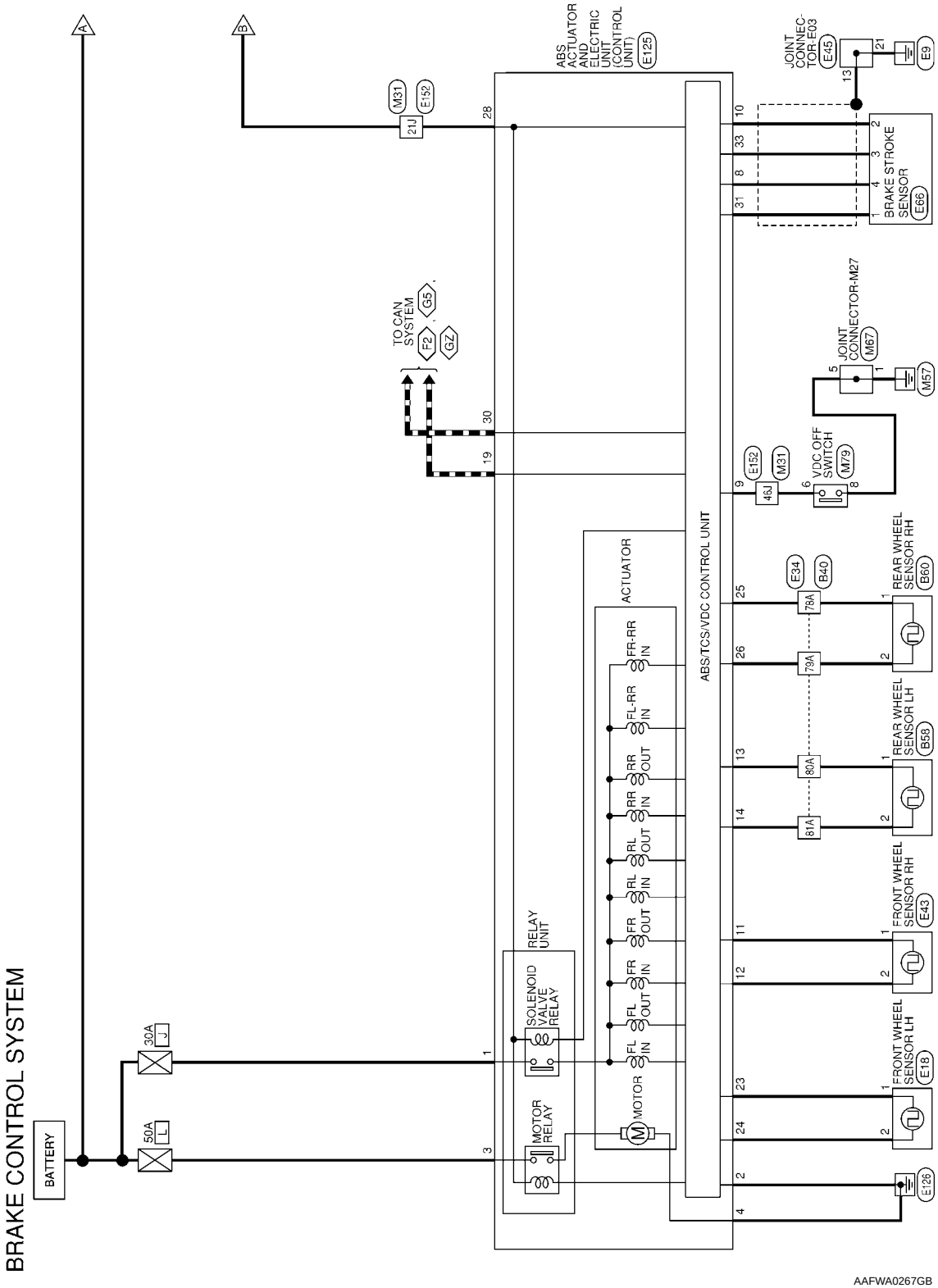
*1: Only when both 2 rear wheels are malfunctioning
*2: 2WD models
*3: AWD models

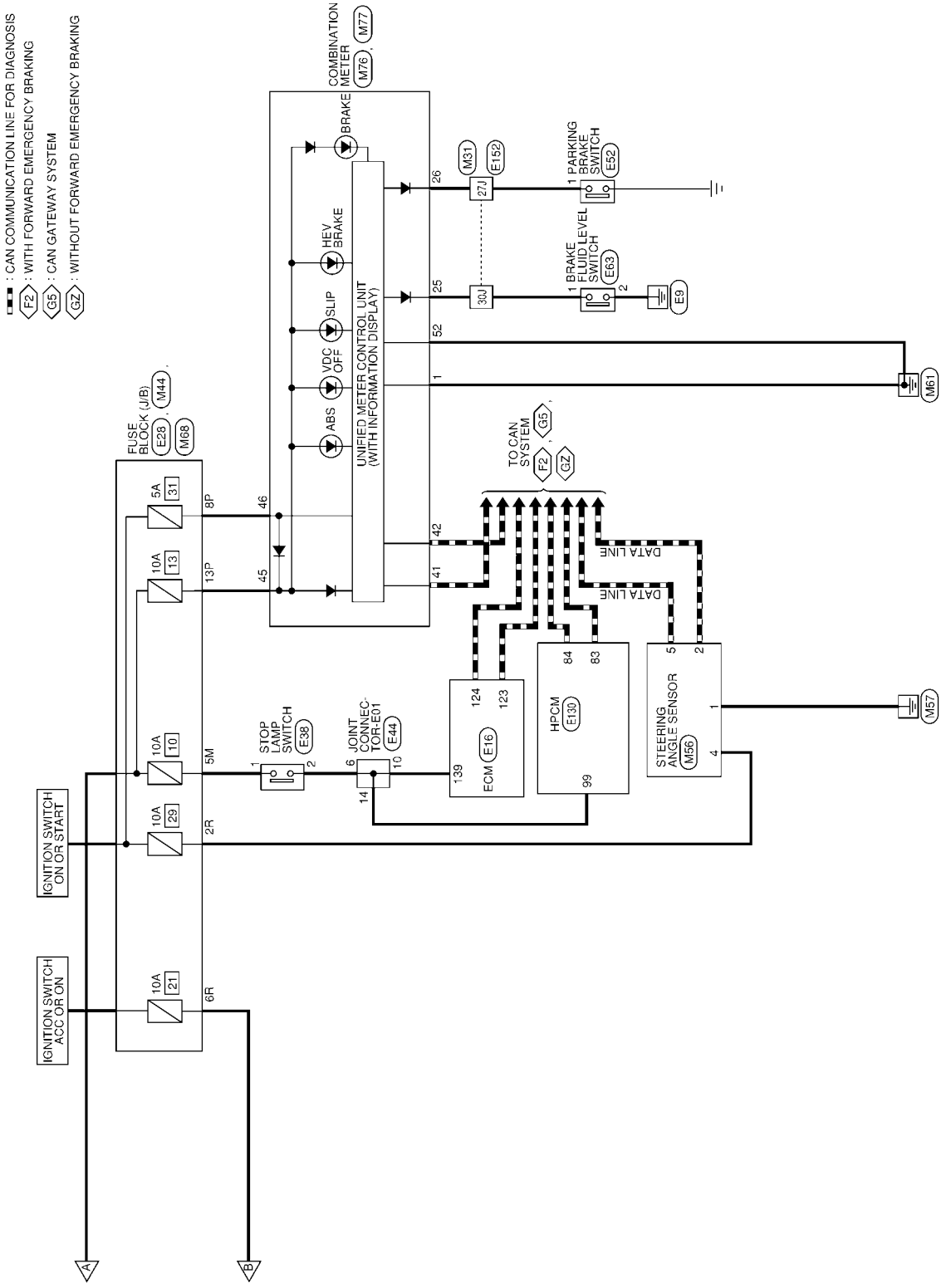
WIRING DIAGRAM

BRAKE CONTROL SYSTEM

Wiring Diagram

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BRAKE CONTROL SYSTEM CONNECTORS

Connector No.	B40
Connector Name	WIRE TO WIRE
Connector Type	TH80MDGY-CS16-TM4
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
1A	–	TO ENGINE ROOM HARNESS
2A	–	TO ENGINE ROOM HARNESS
3A	–	TO ENGINE ROOM HARNESS
4A	–	TO ENGINE ROOM HARNESS
5A	–	TO ENGINE ROOM HARNESS
6A	LG	TO ENGINE ROOM HARNESS
7A	Y	TO ENGINE ROOM HARNESS
8A	GR	TO ENGINE ROOM HARNESS
9A	BR	TO ENGINE ROOM HARNESS
10A	–	TO ENGINE ROOM HARNESS
11A	–	TO ENGINE ROOM HARNESS
12A	–	TO ENGINE ROOM HARNESS
13A	–	TO ENGINE ROOM HARNESS
14A	–	TO ENGINE ROOM HARNESS
15A	–	TO ENGINE ROOM HARNESS
16A	–	TO ENGINE ROOM HARNESS
17A	–	TO ENGINE ROOM HARNESS
18A	–	TO ENGINE ROOM HARNESS
19A	–	TO ENGINE ROOM HARNESS
20A	–	TO ENGINE ROOM HARNESS
21A	–	TO ENGINE ROOM HARNESS
22A	–	TO ENGINE ROOM HARNESS
23A	–	TO ENGINE ROOM HARNESS
24A	–	TO ENGINE ROOM HARNESS
25A	–	TO ENGINE ROOM HARNESS
26A	–	TO ENGINE ROOM HARNESS
27A	–	TO ENGINE ROOM HARNESS
28A	–	TO ENGINE ROOM HARNESS
29A	–	TO ENGINE ROOM HARNESS
30A	–	TO ENGINE ROOM HARNESS
31A	–	TO ENGINE ROOM HARNESS
32A	–	TO ENGINE ROOM HARNESS
33A	–	TO ENGINE ROOM HARNESS
34A	–	TO ENGINE ROOM HARNESS
35A	–	TO ENGINE ROOM HARNESS
36A	–	TO ENGINE ROOM HARNESS
37A	–	TO ENGINE ROOM HARNESS
38A	–	TO ENGINE ROOM HARNESS
39A	–	TO ENGINE ROOM HARNESS
40A	–	TO ENGINE ROOM HARNESS
41A	–	TO ENGINE ROOM HARNESS
42A	–	TO ENGINE ROOM HARNESS
43A	–	TO ENGINE ROOM HARNESS
44A	–	TO ENGINE ROOM HARNESS
45A	–	TO ENGINE ROOM HARNESS
46A	–	TO ENGINE ROOM HARNESS
47A	–	TO ENGINE ROOM HARNESS
48A	–	TO ENGINE ROOM HARNESS
49A	–	TO ENGINE ROOM HARNESS
50A	–	TO ENGINE ROOM HARNESS
51A	–	TO ENGINE ROOM HARNESS
52A	–	TO ENGINE ROOM HARNESS
53A	–	TO ENGINE ROOM HARNESS
54A	R	TO ENGINE ROOM HARNESS
55A	L	TO ENGINE ROOM HARNESS
56A	BR	TO ENGINE ROOM HARNESS
57A	W	TO ENGINE ROOM HARNESS
58A	B	TO ENGINE ROOM HARNESS
59A	LG	TO ENGINE ROOM HARNESS
60A	B	TO ENGINE ROOM HARNESS
61A	SHIELD	TO ENGINE ROOM HARNESS
62A	–	TO ENGINE ROOM HARNESS
63A	LG	TO ENGINE ROOM HARNESS
64A	Y	TO ENGINE ROOM HARNESS
65A	P	TO ENGINE ROOM HARNESS
66A	R	TO ENGINE ROOM HARNESS
67A	SB	TO ENGINE ROOM HARNESS
68A	BG	TO ENGINE ROOM HARNESS
69A	GR	TO ENGINE ROOM HARNESS
70A	G	TO ENGINE ROOM HARNESS
71A	–	TO ENGINE ROOM HARNESS
72A	–	TO ENGINE ROOM HARNESS
73A	–	TO ENGINE ROOM HARNESS
74A	–	TO ENGINE ROOM HARNESS
75A	B	TO ENGINE ROOM HARNESS
76A	G	TO ENGINE ROOM HARNESS
77A	SB	TO ENGINE ROOM HARNESS
78A	BG	TO ENGINE ROOM HARNESS
79A	Y	TO ENGINE ROOM HARNESS
80A	BR	TO ENGINE ROOM HARNESS
81A	R	TO ENGINE ROOM HARNESS
82A	–	TO ENGINE ROOM HARNESS
83A	–	TO ENGINE ROOM HARNESS
84A	–	TO ENGINE ROOM HARNESS
85A	–	TO ENGINE ROOM HARNESS
86A	–	TO ENGINE ROOM HARNESS
87A	–	TO ENGINE ROOM HARNESS
88A	–	TO ENGINE ROOM HARNESS
89A	–	TO ENGINE ROOM HARNESS
90A	–	TO ENGINE ROOM HARNESS
91A	–	TO ENGINE ROOM HARNESS
92A	–	TO ENGINE ROOM HARNESS
93A	–	TO ENGINE ROOM HARNESS
94A	–	TO ENGINE ROOM HARNESS
95A	–	TO ENGINE ROOM HARNESS
96A	BG	TO ENGINE ROOM HARNESS
97A	–	TO ENGINE ROOM HARNESS
98A	GR	TO ENGINE ROOM HARNESS
99A	LA/BR	TO ENGINE ROOM HARNESS
100A	G	TO ENGINE ROOM HARNESS

Connector No.	B58
Connector Name	REAR WHEEL SENSOR LH
Connector Type	RH02FB
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	BR	WSP RL
2	R	WSS RL

Connector No.	B60
Connector Name	REAR WHEEL SENSOR RH
Connector Type	RH02FB
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	BG	WSP RR
2	Y	WSS RR

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BRAKE CONTROL SYSTEM CONNECTORS

Connector No.	E16
Connector Name	ECM
Connector Type	RH24FB-RZ8-L-LH
Connector Color	BLACK

H.S.

121	125	129	133	137	141	145	149
122	126	130	134	138	142	146	150
123	127	131	135	139	143	147	151
124	128	132	136	140	144	148	152

Terminal No.	Color of Wire	Signal Name
121	L	EVAP CONTROL SYSTEM PRESSURE SENSOR
122	-	-
123	P	CAN-L
124	L	CAN-H
125	R	SENSOR POWER SUPPLY
126	-	-
127	-	-
128	BG	FUEL TANK TEMPERATURE SENSOR
129	-	-
130	-	-
131	-	-
132	-	-
133	LG	IGNITION SWITCH
134	-	-
135	-	-
136	-	-
137	G	HEV CAN-L
138	L	HEV CAN-H
139	Y	STOP LAMP SWITCH
140	GR	BRAKE PEDAL POSITION SWITCH
141	Y	EVAP CANISTER VENT CONTROL VALVE
142	-	-
143	-	-
144	-	-
145	G	ECM POWER SUPPLY
146	-	-
147	GR	ECM GROUND
148	B	SENSOR GROUND
149	GR	ECM GROUND
150	-	-
151	-	-
152	GR	ECM GROUND

Connector No.	E18
Connector Name	FRONT WHEEL SENSOR LH
Connector Type	RH02MGY
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
1	W	WSP FL
2	P	WSS FL

Connector No.	E28
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS10FW-CS
Connector Color	WHITE

H.S.

4M	3M		2M	1M
10M	9M	8M	7M	6M	5M

Terminal No.	Color of Wire	Signal Name
1M	-	-
2M	-	-
3M	-	-
4M	-	-
5M	V	BATTERY
6M	Y	O LIGHT POSITION REAR LH
7M	-	-
8M	-	-
9M	-	-
10M	-	-

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BRAKE CONTROL SYSTEM CONNECTORS

Connector No.	E34
Connector Name	WIRE TO WIRE
Connector Type	TH80FDGY-CS16-TM4
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
1A	–	TO BODY HARNESS
2A	–	TO BODY HARNESS
3A	–	TO BODY HARNESS
4A	–	TO BODY HARNESS
5A	–	TO BODY HARNESS
6A	L	TO BODY HARNESS
7A	R	TO BODY HARNESS
8A	GR	TO BODY HARNESS
9A	BR	TO BODY HARNESS
10A	–	TO BODY HARNESS
11A	–	TO BODY HARNESS
12A	–	TO BODY HARNESS
13A	–	TO BODY HARNESS
14A	–	TO BODY HARNESS
15A	–	TO BODY HARNESS
16A	–	TO BODY HARNESS
17A	–	TO BODY HARNESS
18A	–	TO BODY HARNESS
19A	–	TO BODY HARNESS
20A	–	TO BODY HARNESS
21A	–	TO BODY HARNESS
22A	–	TO BODY HARNESS
23A	–	TO BODY HARNESS
24A	–	TO BODY HARNESS
25A	–	TO BODY HARNESS
26A	–	TO BODY HARNESS
27A	–	TO BODY HARNESS
28A	–	TO BODY HARNESS
29A	–	TO BODY HARNESS
30A	–	TO BODY HARNESS
31A	–	TO BODY HARNESS
32A	–	TO BODY HARNESS
33A	–	TO BODY HARNESS
34A	–	TO BODY HARNESS
35A	–	TO BODY HARNESS
36A	–	TO BODY HARNESS
37A	–	TO BODY HARNESS
38A	–	TO BODY HARNESS
39A	–	TO BODY HARNESS
40A	–	TO BODY HARNESS
41A	–	TO BODY HARNESS
42A	–	TO BODY HARNESS
43A	–	TO BODY HARNESS
44A	–	TO BODY HARNESS
45A	–	TO BODY HARNESS
46A	–	TO BODY HARNESS
47A	–	TO BODY HARNESS
48A	–	TO BODY HARNESS
49A	–	TO BODY HARNESS
50A	–	TO BODY HARNESS
51A	–	TO BODY HARNESS
52A	–	TO BODY HARNESS
53A	–	TO BODY HARNESS
54A	R	TO BODY HARNESS
55A	L	TO BODY HARNESS
56A	BR	TO BODY HARNESS
57A	W	TO BODY HARNESS
58A	V	TO BODY HARNESS
59A	Y	TO BODY HARNESS
60A	B	TO BODY HARNESS
61A	SHIELD	TO BODY HARNESS
62A	–	TO BODY HARNESS
63A	L	TO BODY HARNESS
64A	Y	TO BODY HARNESS
65A	P	TO BODY HARNESS
66A	R	TO BODY HARNESS
67A	SB	TO BODY HARNESS
68A	BG	TO BODY HARNESS
69A	GR	TO BODY HARNESS
70A	LG	TO BODY HARNESS
71A	–	TO BODY HARNESS
72A	–	TO BODY HARNESS
73A	–	TO BODY HARNESS
74A	–	TO BODY HARNESS
75A	B	TO BODY HARNESS
76A	G	TO BODY HARNESS
77A	SB	TO BODY HARNESS
78A	BG	TO BODY HARNESS
79A	LG	TO BODY HARNESS
80A	BR	TO BODY HARNESS
81A	G	TO BODY HARNESS
82A	–	TO BODY HARNESS
83A	–	TO BODY HARNESS
84A	–	TO BODY HARNESS
85A	–	TO BODY HARNESS
86A	–	TO BODY HARNESS
87A	–	TO BODY HARNESS
88A	–	TO BODY HARNESS
89A	–	TO BODY HARNESS
90A	–	TO BODY HARNESS
91A	–	TO BODY HARNESS
92A	–	TO BODY HARNESS
93A	–	TO BODY HARNESS
94A	–	TO BODY HARNESS
95A	–	TO BODY HARNESS
96A	G	TO BODY HARNESS
97A	–	TO BODY HARNESS
98A	GR	TO BODY HARNESS
99A	W	TO BODY HARNESS
100A	G	TO BODY HARNESS

Connector No.	E38
Connector Name	STOP LAMP SWITCH
Connector Type	M04FW-LC
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	V	BATTERY
2	LG	I BRAKE SW2
3	L	IGNITION
4	W	STOP LAMP SWITCH OUTPUT

Connector No.	E43
Connector Name	FRONT WHEEL SENSOR RH
Connector Type	RH02MGY
Connector Color	GRAY

H.S.

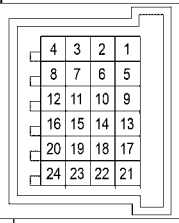
Terminal No.	Color of Wire	Signal Name
1	V	WSP FR
2	SB	WSS FR

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BRAKE CONTROL SYSTEM CONNECTORS

Connector No.	E44
Connector Name	JOINT CONNECTOR-E01
Connector Type	NH24FG-J
Connector Color	GREEN

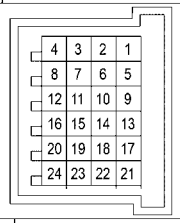
H.S.



Terminal No.	Color of Wire	Signal Name
1	V	SENSOR GROUND
2	LG	I BRAKE SW2
3	P	CAN-L
4	L	CAN-H
5	B	SENSOR GROUND
6	LG	I BRAKE SW2
7	P	CAN-L
8	L	CAN-H
9	W	SENSOR GROUND
10	Y	STOP LAMP SWITCH
11	P	CAN-L
12	L	CAN-H
13	–	–
14	R	STOP LAMP SWITCH
15	P	CAN-L
16	L	CAN-H
17	BR	EVAP CONTROL SYSTEM PRESSURE SENSOR
18	–	–
19	P	CAN-L
20	L	CAN-H
21	L	EVAP CONTROL SYSTEM PRESSURE SENSOR
22	–	–
23	–	–
24	–	–

Connector No.	E45
Connector Name	JOINT CONNECTOR-E03
Connector Type	NH24FW-J
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	G	CAN-L
3	L	CAN-H
4	–	–
5	B	GROUND
6	G	HEV CAN-L
7	L	HEV CAN-H
8	–	–
9	B	GROUND
10	G	CAN-L
11	L	CAN-H
12	–	–
13	SHIELD	SHIELD
14	G	CAN-L
15	L	CAN-H
16	–	–
17	B	GROUND
18	G	HEV CAN-L
19	L	HEV CAN-H
20	–	–
21	B	GROUND
22	–	–
23	–	–
24	–	–

Connector No.	E52
Connector Name	PARKING BRAKE SWITCH
Connector Type	P01FB-A
Connector Color	BLACK

H.S.



Terminal No.	Color of Wire	Signal Name
1	G	PKB SW

Connector No.	E63
Connector Name	BRAKE FLUID LEVEL SWITCH
Connector Type	RH02FB
Connector Color	BLACK

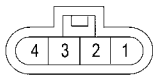
H.S.



Terminal No.	Color of Wire	Signal Name
1	V	BRAKE OIL SW
2	BR	GROUND

Connector No.	E66
Connector Name	BRAKE STROKE SENSOR
Connector Type	HS04FB
Connector Color	BLACK

H.S.



Terminal No.	Color of Wire	Signal Name
1	B	VSSG (GND)
2	G	SKS2 (S2)
3	R	ASSM (POWER)
4	W	SKS1 (S1)

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BRAKE CONTROL SYSTEM CONNECTORS

Connector No.	E125
Connector Name	ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)
Connector Type	SAZ34FB-HS2-SJZ2-DH
Connector Color	BLACK

H.S.

2	16	15	14	13	12	11	10	9	8	7	6	5	1
4	27	26	25	24	23	22	21	20	19	18	17	3	
	38	37	36	35	34	33	32	31	30	29	28		

Terminal No.	Color of Wire	Signal Name
1	BR	UB VR
2	B	GND MR
3	Y	UB MR
4	B	GND ECU
5	–	–
6	–	–
7	–	–
8	W	SKS1 (S1)
9	BR	VDC OFF
10	G	SKS2 (S2)
11	V	WSP FR
12	SB	WSS FR
13	BR	WSP RL
14	G	WSS RL
15	–	–
16	–	–
17	–	–
18	–	–
19	L	CAN- H
20	–	–
21	–	–
22	–	–
23	W	WSP FL
24	P	WSS FL
25	BG	WSP RR
26	LG	WSS RR
27	–	–
28	GR	WAU
29	–	–
30	P	CAN- L
31	B	VSSG (GND)
32	–	–
33	R	ASSM (VCC)
35	–	–
36	–	–
37	–	–

Connector No.	E130
Connector Name	HPCM
Connector Type	RH24FB-RZ8-L-RH
Connector Color	BLACK

H.S.

81	85	89	93	97	101	105	109
82	86	90	94	98	102	106	110
83	87	91	95	99	103	107	111
84	88	92	96	100	104	108	112

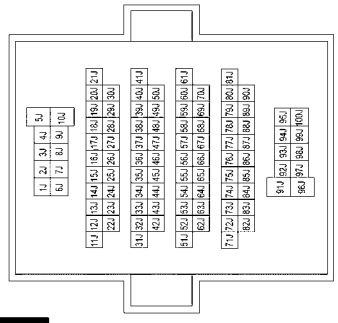
Terminal No.	Color of Wire	Signal Name
81	R	12V BATTERY VOLTAGE
82	–	–
83	P	CAN-L
84	L	CAN-H
85	–	–
86	–	–
87	–	–
88	B	DC/DC CONVERTER VOLTAGE STABILIZER SIGNAL
89	–	–
90	–	–
91	–	–
92	–	–
93	Y	IGNITION SIGNAL
94	G	ASCD STEERING SWITCH
95	BR	ASCD STEERING SWITCH GROUND
96	–	–
97	L	HEV SYSTEM CAN-H
98	G	HEV SYSTEM CAN-L
99	R	STOP LAMP SWITCH
100	W	BRAKE PEDAL POSITION SWITCH
101	–	–
102	SB	SENSOR POWER SUPPLY
103	BR	ACCELERATOR PEDAL POSITION SENSOR 2
104	LG	SENSOR GROUND
105	BR	POWER SUPPLY FOR HPCM
106	V	SENSOR POWER SUPPLY
107	–	–
108	B	HPCM GND
109	–	–
110	GR	ACCELERATOR PEDAL POSITION SENSOR 1
111	R	SENSOR GROUND
112	GR	HPCM GND

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BRAKE CONTROL SYSTEM CONNECTORS

Connector No.	E152
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
1J	–	TO MAIN HARNESS
2J	Y	TO MAIN HARNESS
3J	–	TO MAIN HARNESS
4J	–	TO MAIN HARNESS
5J	–	TO MAIN HARNESS
6J	–	TO MAIN HARNESS
7J	–	TO MAIN HARNESS
8J	–	TO MAIN HARNESS
9J	BR	TO MAIN HARNESS
10J	–	TO MAIN HARNESS
11J	–	TO MAIN HARNESS
12J	–	TO MAIN HARNESS
13J	–	TO MAIN HARNESS
14J	–	TO MAIN HARNESS
15J	–	TO MAIN HARNESS
16J	–	TO MAIN HARNESS
17J	–	TO MAIN HARNESS
18J	–	TO MAIN HARNESS
19J	–	TO MAIN HARNESS
20J	–	TO MAIN HARNESS
21J	GR	TO MAIN HARNESS
22J	SHIELD	TO MAIN HARNESS
23J	LG	TO MAIN HARNESS
24J	V	TO MAIN HARNESS
25J	L	TO MAIN HARNESS
26J	BR	TO MAIN HARNESS
27J	G	TO MAIN HARNESS
28J	R	TO MAIN HARNESS
29J	L	TO MAIN HARNESS
30J	V	TO MAIN HARNESS
31J	–	TO MAIN HARNESS
32J	–	TO MAIN HARNESS
33J	R	TO MAIN HARNESS
34J	L	TO MAIN HARNESS
35J	BG	TO MAIN HARNESS
36J	LG	TO MAIN HARNESS
37J	GR	TO MAIN HARNESS
38J	BR	TO MAIN HARNESS
39J	–	TO MAIN HARNESS
40J	–	TO MAIN HARNESS
41J	G	TO MAIN HARNESS
42J	W	TO MAIN HARNESS
43J	L	TO MAIN HARNESS
44J	B	TO MAIN HARNESS
45J	SB	TO MAIN HARNESS
46J	BR	TO MAIN HARNESS
47J	W	TO MAIN HARNESS
48J	W	TO MAIN HARNESS
49J	L	TO MAIN HARNESS
50J	P	TO MAIN HARNESS
51J	W	TO MAIN HARNESS
52J	R	TO MAIN HARNESS
53J	SB	TO MAIN HARNESS
54J	LG	TO MAIN HARNESS
55J	W	TO MAIN HARNESS
56J	BG	TO MAIN HARNESS
57J	R	TO MAIN HARNESS
58J	V	TO MAIN HARNESS
59J	BR	TO MAIN HARNESS
60J	P	TO MAIN HARNESS
61J	L	TO MAIN HARNESS
62J	P	TO MAIN HARNESS
63J	L	TO MAIN HARNESS
64J	R	TO MAIN HARNESS
65J	L	TO MAIN HARNESS
66J	BG	TO MAIN HARNESS
67J	–	TO MAIN HARNESS
68J	–	TO MAIN HARNESS
69J	G	TO MAIN HARNESS
70J	L	TO MAIN HARNESS
71J	–	TO MAIN HARNESS
72J	–	TO MAIN HARNESS
73J	–	TO MAIN HARNESS
74J	–	TO MAIN HARNESS
75J	–	TO MAIN HARNESS
76J	–	TO MAIN HARNESS
77J	–	TO MAIN HARNESS
78J	–	TO MAIN HARNESS
79J	SHIELD	TO MAIN HARNESS
80J	B	TO MAIN HARNESS
81J	W	TO MAIN HARNESS
82J	–	TO MAIN HARNESS
83J	–	TO MAIN HARNESS
84J	–	TO MAIN HARNESS
85J	–	TO MAIN HARNESS
86J	–	TO MAIN HARNESS
87J	–	TO MAIN HARNESS
88J	–	TO MAIN HARNESS
89J	–	TO MAIN HARNESS
90J	–	TO MAIN HARNESS
91J	–	TO MAIN HARNESS
92J	LG	TO MAIN HARNESS
93J	L	TO MAIN HARNESS
94J	L	TO MAIN HARNESS
95J	BR	TO MAIN HARNESS
96J	–	TO MAIN HARNESS
97J	GR	TO MAIN HARNESS
98J	P	TO MAIN HARNESS
99J	W	TO MAIN HARNESS
100J	Y	TO MAIN HARNESS

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BRAKE CONTROL SYSTEM CONNECTORS

Connector No.	M31
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1J	–	TO ENGINE ROOM HARNESS
2J	R	TO ENGINE ROOM HARNESS
3J	–	TO ENGINE ROOM HARNESS
4J	–	TO ENGINE ROOM HARNESS
5J	–	TO ENGINE ROOM HARNESS
6J	–	TO ENGINE ROOM HARNESS
7J	–	TO ENGINE ROOM HARNESS
8J	–	TO ENGINE ROOM HARNESS
9J	W	TO ENGINE ROOM HARNESS
10J	–	TO ENGINE ROOM HARNESS
11J	–	TO ENGINE ROOM HARNESS
12J	–	TO ENGINE ROOM HARNESS
13J	–	TO ENGINE ROOM HARNESS
14J	–	TO ENGINE ROOM HARNESS
15J	–	TO ENGINE ROOM HARNESS
16J	–	TO ENGINE ROOM HARNESS
17J	–	TO ENGINE ROOM HARNESS
18J	–	TO ENGINE ROOM HARNESS
19J	–	TO ENGINE ROOM HARNESS
20J	–	TO ENGINE ROOM HARNESS
21J	LA/L	TO ENGINE ROOM HARNESS
22J	SHIELD	TO ENGINE ROOM HARNESS
23J	LG	TO ENGINE ROOM HARNESS
24J	V	TO ENGINE ROOM HARNESS
25J	L	TO ENGINE ROOM HARNESS
26J	BR	TO ENGINE ROOM HARNESS
27J	G	TO ENGINE ROOM HARNESS
28J	Y	TO ENGINE ROOM HARNESS
29J	L	TO ENGINE ROOM HARNESS
30J	V	TO ENGINE ROOM HARNESS
31J	–	TO ENGINE ROOM HARNESS
32J	–	TO ENGINE ROOM HARNESS
33J	R	TO ENGINE ROOM HARNESS
33J	Y	TO ENGINE ROOM HARNESS - (WITH DRIVER ASSISTNACE SYSTEM)
34J	L	TO ENGINE ROOM HARNESS
35J	BG	TO ENGINE ROOM HARNESS
36J	GR	TO ENGINE ROOM HARNESS
37J	Y	TO ENGINE ROOM HARNESS
38J	LA/BR	TO ENGINE ROOM HARNESS
39J	–	TO ENGINE ROOM HARNESS
40J	–	TO ENGINE ROOM HARNESS
41J	LA/R	TO ENGINE ROOM HARNESS
42J	W	TO ENGINE ROOM HARNESS
43J	L	TO ENGINE ROOM HARNESS
44J	B	TO ENGINE ROOM HARNESS
45J	SB	TO ENGINE ROOM HARNESS
46J	BR	TO ENGINE ROOM HARNESS
47J	W	TO ENGINE ROOM HARNESS
48J	R	TO ENGINE ROOM HARNESS
49J	SB	TO ENGINE ROOM HARNESS
50J	GR	TO ENGINE ROOM HARNESS
51J	W	TO ENGINE ROOM HARNESS
52J	R	TO ENGINE ROOM HARNESS
53J	BR	TO ENGINE ROOM HARNESS
54J	LG	TO ENGINE ROOM HARNESS
55J	LA/Y	TO ENGINE ROOM HARNESS
56J	LA/V	TO ENGINE ROOM HARNESS
57J	LA/R	TO ENGINE ROOM HARNESS
58J	W	TO ENGINE ROOM HARNESS
59J	BR	TO ENGINE ROOM HARNESS
60J	P	TO ENGINE ROOM HARNESS
61J	L	TO ENGINE ROOM HARNESS
62J	R	TO ENGINE ROOM HARNESS
63J	L	TO ENGINE ROOM HARNESS
64J	R	TO ENGINE ROOM HARNESS
65J	L	TO ENGINE ROOM HARNESS
66J	BG	TO ENGINE ROOM HARNESS
67J	–	TO ENGINE ROOM HARNESS
68J	–	TO ENGINE ROOM HARNESS
69J	G	TO ENGINE ROOM HARNESS
70J	L	TO ENGINE ROOM HARNESS
71J	–	TO ENGINE ROOM HARNESS
72J	–	TO ENGINE ROOM HARNESS
73J	–	TO ENGINE ROOM HARNESS
74J	–	TO ENGINE ROOM HARNESS
75J	–	TO ENGINE ROOM HARNESS
76J	–	TO ENGINE ROOM HARNESS
77J	–	TO ENGINE ROOM HARNESS
78J	–	TO ENGINE ROOM HARNESS
79J	SHIELD	TO ENGINE ROOM HARNESS
80J	B	TO ENGINE ROOM HARNESS
81J	W	TO ENGINE ROOM HARNESS
82J	–	TO ENGINE ROOM HARNESS
83J	–	TO ENGINE ROOM HARNESS
84J	–	TO ENGINE ROOM HARNESS
85J	–	TO ENGINE ROOM HARNESS
86J	–	TO ENGINE ROOM HARNESS
87J	–	TO ENGINE ROOM HARNESS
88J	–	TO ENGINE ROOM HARNESS
89J	–	TO ENGINE ROOM HARNESS
90J	–	TO ENGINE ROOM HARNESS
91J	–	TO ENGINE ROOM HARNESS
92J	Y	TO ENGINE ROOM HARNESS
93J	G	TO ENGINE ROOM HARNESS
94J	L	TO ENGINE ROOM HARNESS
95J	P	TO ENGINE ROOM HARNESS
96J	–	TO ENGINE ROOM HARNESS
97J	SB	TO ENGINE ROOM HARNESS
98J	P	TO ENGINE ROOM HARNESS
99J	LA/R	TO ENGINE ROOM HARNESS
100J	R	TO ENGINE ROOM HARNESS

Connector No.	M44
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS16FW-CS
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1P	R	IGNITION
2P	G	IGNITION
3P	Y	IGNITION RELAY-2 CONTROL
4P	LG	REAR WINDOW DEFOGGER RELAY OUTPUT
5P	GR	REAR WINDOW DEFOGGER RELAY OUTPUT
6P	LA/R	REAR WINDOW DEFOGGER RELAY CONTROL
7P	Y	IGNITION
8P	V	IGNITION
9P	L	BATTERY
10P	LG	IGNITION
11P	–	–
12P	–	–
13P	G	BATTERY
14P	–	–
15P	L	BATTERY
16P	LA/W	FRONT BLOWER MOTOR RELAY CONTROL

Connector No.	M56
Connector Name	STEERING ANGLE SENSOR
Connector Type	TH08GY-NH
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
1	B	GND
2	P	CAN-L
3	–	–
4	G	IGN
5	L	CAN-H
6	–	–
7	–	–
8	–	–

Connector No.	M67
Connector Name	JOINT CONNECTOR-M27
Connector Type	SAC08JW
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	B	GROUND
3	B	GROUND
4	B	GROUND
5	B	GROUND
6	B	GROUND
7	B	GROUND
8	B	GROUND

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BRAKE CONTROL SYSTEM CONNECTORS

Connector No.	M68
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS16FBR-CS
Connector Color	BROWN

H.S.

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

Terminal No.	Color of Wire	Signal Name
1R	V	ILLUMINATION +
2R	G	IGNITION
3R	V	BATTERY
4R	-	-
5R	-	-
6R	LA/L	ACCESSORY
7R	LA/V	BATTERY
8R	-	-
9R	-	-
10R	GR	BATTERY
11R	-	-
12R	-	-
13R	-	-
14R	W	BATTERY
15R	W	BATTERY
16R	GR	ACCESSORY

Connector No.	M76
Connector Name	COMBINATION METER
Connector Type	TH40FW-NH
Connector Color	WHITE

H.S.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

Terminal No.	Color of Wire	Signal Name
1	B	GND
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-
7	BG	SECURITY

8	-	-
9	GR	ECO MODE SW
10	-	-
11	-	-
12	-	-
13	-	-
14	-	-
15	L	OUTSIDE TEMP SENSOR
16	-	-
17	BG	SATELLITE SW GND
18	SB	TRIP RESET SW
19	-	-
20	Y	OUTSIDE TEMP GND
21	L	GND (STRG SW GND)
22	Y	STRG SW A
23	GR	STRG SW B
24	BR	WASHER SW
25	V	BRAKE OIL SW
26	G	PKB SW
27	-	-
28	Y	DR BELT SW
29	R	SPORT MODE SW
30	LG	M RANGE
31	SB	NOT M RANGE
32	BG	AT SHIFT UP
33	BR	AT SHIFT DOWN
34	-	-
35	-	-
36	GR	ILL UP SW
37	V	ILL DOWN SW
38	G	8P/R OUTPUT
39	W	2P/R OUTPUT
40	-	-

Connector No.	M77
Connector Name	COMBINATION METER
Connector Type	TH12FW-NH
Connector Color	WHITE

H.S.

41	42	43	44	45	46
47	48	49	50	51	52

Terminal No.	Color of Wire	Signal Name
41	L	CAN-H
42	P	CAN-L
43	R	ILL CONT OUT
44	LA/B	FUEL SENSOR GND

45	G	BAT
46	V	IGN
47	SB	M-CAN H
48	LG	M-CAN L
49	-	-
50	-	-
51	LA/L	FUEL SENSOR
52	B	G1

Connector No.	M79
Connector Name	VDC OFF SWITCH
Connector Type	TH08FB-NH
Connector Color	BLACK

H.S.

4	3	2	1
8	7	6	5

Terminal No.	Color of Wire	Signal Name
1	G	ILL CONT OUT
2	-	-
3	-	-
4	B	GROUND
5	-	-
6	BR	VDC OFF
7	-	-
8	B	GROUND

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BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:0000000014895580

DETAILED FLOW

1.INTERVIEW FROM THE CUSTOMER

Clarify customer complaints before inspection. First of all, perform an interview utilizing BRC-74, "Diagnostic Work Sheet" and reproduce the symptom as well as fully understand it. Ask customer about his/her complaints carefully. Check symptoms by driving vehicle with customer, if necessary.

CAUTION:

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

>> GO TO 2.

2.CHECK SYMPTOM

Reproduce the symptom that is indicated by the customer, based on the information from the customer obtained by interview. Also check that the symptom is not caused by fail-safe mode. Refer to BRC-56, "Fail-safe".

CAUTION:

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

>> GO TO 3.

3.PERFORM THE SELF-DIAGNOSIS

CONSULT

1. Turn the ignition switch OFF → ON.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
2. Repeat step 1 two or more times.
3. Select “Select Self Diagnostic” mode of “ABS”.

Is DTC detected?

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

4.RECHECK THE SYMPTOM

CONSULT

1. Erase “Select Self Diagnostic” for “ABS”.
2. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
3. Perform DTC confirmation procedures for the error-detected system.
   NOTE:
   If some DTCs are detected at the some time, determine the order for performing the diagnosis based on BRC-60, "DTC Inspection Priority Chart".

Is DTC detected?

YES >> GO TO 5.
NO >> Check harness and connectors based on the information obtained by interview. Refer to GI-54, "Intermittent Incident".

5.REPAIR OR REPLACE ERROR-DETECTED PART

CONSULT

1. Repair or replace error-detected parts.
2. Reconnect part or connector after repairing or replacing.

3. When DTC is detected, erase self-diagnostic result for “ABS”.
CAUTION:
- **Turn the ignition switch OFF → ON → OFF after erase self-diagnosis result.**
- **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**

>> GO TO 7.

6. IDENTIFY ERROR-DETECTED SYSTEM BY SYMPTOM DIAGNOSIS

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

Can the error-detected system be identified?

YES >> GO TO 7.
NO >> Check harness and connectors based on the information obtained by interview. Refer to GI-54, "Intermittent Incident".

7. FINAL CHECK

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

Is the symptom reproduced?

YES >> GO TO 3.
NO >> Inspection End.

Diagnostic Work Sheet

INFOID:0000000014895581

Description

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

INTERVIEW SHEET SAMPLE

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

Interview sheet

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

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

Description

INFOID:0000000014895582

When replaced the ABS actuator and electric unit (control unit), perform the following work. For the procedure, refer to BRC-84, "Work Procedure".

- Re/programming, Configuration
- Air bleeding
- Adjustment of steering angle sensor neutral position
- Calibration of decel G sensor
- Stroke sensor 0 point learning

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Description

INFOID:0000000014895583

Always adjust the neutral position of steering angle sensor before driving when the following operation is performed. Refer to BRC-77, "Work Procedure".

×: Required —: Not required

Procedure	Adjust the neutral position of steering angle sensor
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	×
Removing/installing tire	—
Replacing tire	—
Tire rotation	—
Adjusting wheel alignment.	×

Work Procedure

INFOID:0000000014895584

CAUTION:
Always use CONSULT when adjusting the neutral position of steering angle sensor. (It cannot be adjusted other than with CONSULT.)

1.CHECK THE VEHICLE STATUS (1)

Stop vehicle with front wheels in the straight-ahead position.

Does the vehicle stay in the straight-ahead position?

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

2.ADJUST NEUTRAL POSITION OF STEERING ANGLE SENSOR

CONSULT
1. Turn the ignition switch ON.
   CAUTION:
   Never set the vehicle to READY/start the engine.
2. Select “ABS”, “Work support” and “ST ANGLE SENSOR ADJUSTMENT” in this order.
3. Select “START”.
   CAUTION:
   Never touch steering wheel while adjusting steering angle sensor.
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.

3.CHECK DATA MONITOR (1)

CONSULT
1. The vehicle is either pointing straight ahead, or the vehicle needs to be moved. Stop when it is pointing straight ahead.
2. Select “ABS”, “Data monitor”, “ECU INPUT SIGNALS” and “STR ANGLE SIG” in the order. Check that the signal is within the specified value.

STR ANGLE SIG : 0±2.5°

Is the inspection result normal?

YES >> GO TO 10.
NO >> GO TO 4.

4. CHECK STEERING COMPONENT PARTS

Check the installation conditions of steering component parts. Refer to ST-17, "Inspection".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace error-detected parts. GO TO 6.

5. CHECK SUSPENSION COMPONENT PARTS

Check the installation conditions of suspension component parts.
- Front: Refer to FSU-6, "Inspection".
- Rear: Refer to RSU-5, "Inspection and Adjustment".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair or replace error-detected parts. GO TO 6.

6. CHECK WHEEL ALIGNMENT

Check the wheel alignment.
- Front: Refer to FSU-7, "Inspection".
- Rear: Refer to RSU-6, "Inspection".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Adjust the wheel alignment. GO TO 7.
- Front: Refer to FSU-8, "Adjustment".
- Rear: Refer to RSU-6, "Adjustment".

7. CHECK THE VEHICLE STATUS (2)

Check the vehicle stay in the straight-ahead position.

Is the inspection result normal?

YES >> GO TO 8.
NO >> Adjust the vehicle stay in the straight-ahead position. GO TO 8.

8. CHECK DATA MONITOR (2)

CONSULT
1. The vehicle is either pointing straight ahead, or the vehicle needs to be moved. Stop when it is pointing straight ahead.
2. Select “ABS”, “Data Monitor”, “ECU INPUT SIGNALS” and “STR ANGLE SIG” in the order. Check that the signal is within the specified value.

STR ANGLE SIG : 0±2.5°

Is the inspection result normal?

YES >> GO TO 10.
NO >> GO TO 9.

9. CHECK DATA MONITOR (3)

CONSULT
1. The vehicle is either pointing straight ahead, or the vehicle needs to be moved.
   CAUTION:
   - **Drive the vehicle at approx. 30 km/h (19 MPH) or more for 300 m (985 ft) or more.**
   - **Never use tester.**
2. The vehicle is either pointing straight ahead, or the vehicle needs to be moved. Stop when it is pointing straight ahead.

3. Select “ABS”, “Data Monitor”, “ECU INPUT SIGNALS” and “STR ANGLE SIG” in the order. Check that the signal is within the specified value.

STR ANGLE SIG : 0±2.5°

Is the inspection result normal?

YES >> GO TO 10.
NO >> GO TO 1.

10. ERASE SELF-DIAGNOSIS MEMORY

CONSULT

1. Record or print self-diagnosis results and freeze frame data (FFD).
2. Erase “Self Diagnostic Result” of “ABS”.
3. Turn the ignition switch OFF → ON → OFF.

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

Are the memories erased?

YES >> Inspection End.
NO >> Check the items indicated by the self-diagnosis.

CALIBRATION OF DECEL G SENSOR

Description

INFOID:0000000014895585

Always perform the decel G sensor calibration before driving when the following operation is performed. Refer to BRC-80, "Work Procedure".

NOTE:

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

×: 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:0000000014895586

Decel G sensor calibration

CAUTION:

Always use CONSULT for the decel G sensor calibration. (It cannot be adjusted other than with CONSULT.)

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 (ABS)

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 set the vehicle to READY/start the 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 the ignition switch OFF and then turn it ON again.
   CAUTION:
   Be sure to perform the operation above.

>> GO TO 3.

3.CHECK DATA MONITOR

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

DECEL G-SEN : Approx. ±0.08 G

Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 1.

4. ERASE SELF-DIAGNOSIS MEMORY

CONSULT
Erase “Self Diagnostic Result” of “ABS”.

Are the memories erased?

YES >> Inspection End.
NO >> Check the items indicated by the self-diagnosis.

5. PERFORM DECEL G SENSOR CALIBRATION (HPCM)

Perform decel G sensor calibration of HPCM. Refer to HBC-106, "Description"

>> Inspection End.

STROKE SENSOR 0 POINT LEARNING

Description

INFOID:0000000014895587

Always perform stroke sensor calibration before driving after any of the following operations is performed. Refer to BRC-82, "Work Procedure".
- ABS actuator and electric unit (control unit) is removed/replaced.
- Stroke sensor is removed/replaced.
- Brake pedal is removed/replaced.
- Brake pedal heights are adjusted.

Work Procedure

INFOID:0000000014895588

CAUTION:
Make sure to use CONSULT when performing stroke sensor calibration. (It cannot be performed by any means other than CONSULT.)

1.VEHICLE CONDITION

1. Stop the vehicle.
2. Turn the ignition switch OFF.

>> GO TO 2.

2.CHECK 12V BATTERY

Check the 12V battery. Refer to PG-119, "Work Flow".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Charge or replace the 12V battery. Refer to PG-119, "Work Flow". GO TO 3.

3.CHECKING INSTALLATION CONDITIONS OF BRAKE COMPONENTS

Check the installation conditions of brake components.

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace error-detected parts and GO TO 4.

4.CHECK BRAKE PEDAL

Check each brake pedal height. Refer to BR-49, "Inspection".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Adjust each brake pedal height. Refer to BR-49, "Adjustment". GO TO 5.

5.PERFORM THE SELF-DIAGNOSIS

CONSULT
1. Turn the ignition switch OFF to ON without depressing the brake pedal.
   CAUTION:
   Never set the vehicle to READY/Never start the engine.
2. Repeat step 1 two times or more.
   CAUTION:
   Be sure to wait for 5 seconds or more after turning the ignition switch OFF.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON without depressing the brake pedal.
   CAUTION:
   Never set the vehicle to READY/Never start the engine.
5. Start CONSULT, and erase self-diagnosis result of “ABS” after record or print self-diagnosis results and freeze frame data (FFD).
6. Turn the ignition switch OFF.
7. Turn the ignition switch ON without depressing the brake pedal.
   CAUTION:
   Never set the vehicle to READY/Never start the engine.

8. Depress brake pedal by 100 mm (3.94 in) or more, and hold the position for 5 seconds or more.
9. Release brake pedal.
10. Select “Self Diagnostic Result” mode of “ABS”.

Is a malfunction detected?

YES >> Check the DTC. Refer to BRC-61, "DTC Index". GO TO 6.
NO >> GO TO 6.

6. PERFORM PEDAL STROKE SENSOR CALIBRATION

CONSULT
1. Turn the ignition switch OFF to exit CONSULT and wait for 10 seconds or more.
2. Turn the ignition switch ON without depressing the brake pedal.
   CAUTION:
   Never set the vehicle to READY/Never start the engine.
3. Start CONSULT and select “ABS”, “Work support” and “STROKE SENSOR CALIBRATION” according to this order.
   CAUTION:
   Never depress brake pedal.
4. Touch “START”.

Was either “COMPLETED” or “The operation is incomplete. Try again after confirming the operation condition.” displayed?

“COMPLETED”>>Touch the “END”. GO TO 7.
“The operation is incomplete. Try again after confirming the operation condition.”>>GO TO 2.

7. CHECK DATA MONITOR

CONSULT
Select “ABS”, “Data Monitor” and “BRK PEDAL STROKE SEN 1” according to this order. Check that this signal is within the specified value.

BRK PEDAL STROKE SEN 1 : 0.73 – 1.66 V

Is the inspection result normal?

YES >> GO TO 8.
NO >> Check each item of brake pedal. Refer to BR-49, "Adjustment".

8. ERASE SELF-DIAGNOSIS MEMORY

CONSULT
1. Turn the ignition switch OFF to exit CONSULT and wait for 10 seconds or more.
   CAUTION:
   Be sure to perform the operation above.
2. Turn the ignition switch ON without depressing the brake pedal.
   CAUTION:
   Never set the vehicle to READY/Never start the engine.
3. Start CONSULT, and erase self-diagnosis result of “All DTC Reading” after record or print self-diagnosis results and freeze frame data (FFD).
4. Turn the ignition switch OFF.
5. Turn the ignition switch ON.

Are the memories erased?

YES >> Inspection End.
NO >> Check the items indicated by the self-diagnosis.

CONFIGURATION [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)]

Work Procedure

INFOID:0000000014895589

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 catalogue) to search ABS actuator and electric unit (control unit) of the applicable vehicle and find “Type ID”.

Is “Type ID” displayed?

YES >> Print out “Type ID” and GO TO 2.
NO >> “Configuration” is not required for ABS actuator and electric unit (control unit). Replace in the usual manner. Refer to BRC-204, "Removal and Installation".

2. CHECKING TYPE ID (2)

CONSULT Configuration
1. 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 >> GO TO 7.

3. VERIFYING TYPE ID (1)

CONSULT Configuration
Compare a “Type ID” displayed on the CONSULT screen with the one searched by using FAST (service parts catalogue) to check that these “Type ID” agree with each other.

NOTE:
For the “Type ID” searched by using FAST (service parts catalog), use the last five digits of the “Type ID”.

>> GO TO 4.

4. SAVING TYPE ID

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-204, "Removal and Installation".

CAUTION:
Never perform the following work items:
- **Air bleeding**
- **Adjustment of steering angle sensor neutral position**
- **Calibration of decel G sensor**

>> GO TO 6.

6. WRITING (AUTOMATIC WRITING)

CONSULT Configuration
1. Select “After Replace ECU” of “Re/programming, Configuration” or that of “Read / Write Configuration”.

2. Select the “Type ID” agreeing with the one stored on CONSULT and the one searched by using FAST (service parts catalogue) to write the “Type ID” into the ABS actuator and electric unit (control unit).
NOTE:
For the “Type ID” searched by using FAST (service parts catalog), use the last five digits of the “Type ID”.

>> GO TO 9.

7. REPLACING ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) (2)

Replace ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".
CAUTION:
Never perform the following work items:
- **Air bleeding**
- **Adjustment of steering angle sensor neutral position**
- **Calibration of decel G sensor**

>> GO TO 8.

8. WRITING (MANUAL WRITING)

CONSULT Configuration
1. Select “Manual Configuration”.
2. Select the “Type ID” searched by using FAST (service parts catalogue) to write the “Type ID” into the ABS actuator and electric unit (control unit).
NOTE:
For the “Type ID” searched by using FAST (service parts catalog), use the last five digits of the “Type ID”.

>> GO TO 9.

9. VERIFYING TYPE ID (2)

Compare “Type ID” written into the ABS actuator and electric unit (control unit) with the one searched by using FAST (service parts catalogue) to check that these “Type ID” agree with each other.
NOTE:
For the “Type ID” searched by using FAST (service parts catalog), use the last five digits of the “Type ID”.

>> GO TO 10.

10. CHECKING VDC WARNING LAMP

1. Turn the ignition switch OFF.
2. Turn the ignition switch ON and check that the VDC warning lamp turns OFF after staying illuminated for approximately two seconds.
CAUTION:
Never set the vehicle to READY/Never start the engine.

Is the inspection result normal?

YES >> GO TO 11.
NO >> Perform the self-diagnosis of “ABS”. Refer to BRC-49, "CONSULT Function".

11. PERFORMING SUPPLEMENTARY WORK

1. Perform the air bleeding. Refer to BR-52, "Bleeding Brake System".
2. Perform the adjustment of steering angle sensor neutral position. Refer to BRC-77, "Description".
3. Perform the calibration of decel G sensor. Refer to BRC-80, "Description".
4. Perform the Stroke sensor 0 point learning. Refer to BRC-82, "Description".
5. Perform the self-diagnosis of all systems.
6. Record or print self-diagnosis results and freeze frame data (FFD).
7. Erase self-diagnosis results.

>> End of work.

DTC/CIRCUIT DIAGNOSIS

C1101, C1102, C1103, C1104 WHEEL SENSOR

DTC Description

INFOID:0000000014895590

DTC DETECTION LOGIC

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

POSSIBLE CAUSE

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

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery	• Harness or connector • Wheel sensor • ABS actuator and electric unit (control unit) • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery • Vehicle was not driven after previous repair

FAIL-SAFE

The following functions are suspended.
- VDC function
- TCS function
- ABS function
- EBD function (only when both 2 rear wheels are malfunctioning)
- Brake limited slip differential (BLSD) function
- Brake assist function
- hill start assist function
- Brake force distribution function
- Active trace control function (control of chassis control module)
- Active ride control function (control of chassis control module)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Set the vehicle to READY/Start the engine.
2. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.

3. Stop the vehicle.
4. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
5. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
6. Repeat step 4 to 5 two or more times.
7. Select “Self Diagnostic Result” mode of “ABS”.

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

YES-1 >> “C1101”, “C1102”, “C1103” or “C1104” is displayed by “CRNT”: Proceed to BRC-87, "Diagnosis Procedure".
YES-2 >> “C1101”, “C1102”, “C1103” and “C1104” are displayed by “PAST”: Inspection End (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000014895591

CAUTION:
Never check between wheel sensor harness connector terminals.

1.CHECK WHEEL SENSOR

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

Is the inspection result normal?

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

2.REPLACE WHEEL SENSOR (1)

CONSULT
1. Replace the wheel sensor.
- Front: Refer to BRC-13, "Wheel Sensor and Sensor Rotor".
- Rear: Refer to BRC-13, "Wheel Sensor and Sensor Rotor".
2. Erase “Self Diagnostic Result” mode of “ABS”.
3. Turn the ignition switch OFF → ON → OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF or ON.
4. Set the vehicle to READY/Start the engine.
5. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
   NOTE:
   Vehicle must be driven after repair or replacement to erase the previous DTCs.
6. Stop the vehicle.
7. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
8. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
9. Repeat step 7 to 8 two or more times.
10. Select “Self Diagnostic Result” mode of “ABS”.

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

YES >> GO TO 3.
NO >> Inspection End.

3.CHECK CONNECTOR

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

Is the inspection result normal?

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

4. PERFORM SELF-DIAGNOSIS (1)

CONSULT
1. Erase self-diagnosis result for “ABS”.
2. Turn the ignition switch OFF → ON → OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF or ON.
3. Set the vehicle to READY/Start the engine.
4. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
   NOTE:
   Vehicle must be driven after repair or replacement to erase the previous DTCs.
5. Stop the vehicle.
6. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
7. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
8. Repeat step 6 to 7 two or more times.
9. Select “Self Diagnostic Result” mode of “ABS”.

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

YES >> GO TO 5.
NO >> Inspection End.

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-169, "Diagnosis Procedure".

Is the inspection result normal?

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

6. CHECK TERMINAL

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

Is the inspection result normal?

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

7. PERFORM SELF-DIAGNOSIS (2)

CONSULT
1. Connect ABS actuator and electric unit (control unit) harness connector.
2. Connect wheel sensor harness connector.
3. Erase “Self Diagnostic Result” mode of “ABS”.
4. Turn the ignition switch OFF → ON → OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF or ON.
5. Set the vehicle to READY/Start the engine.
6. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
   NOTE:
   Vehicle must be driven after repair or replacement to erase the previous DTCs.
7. Stop the vehicle.
8. Turn the ignition switch OFF.
   NOTE:

Wait at least 10 seconds after turning ignition switch OFF.
9. Set the vehicle to READY/Start the engine.
NOTE:
Wait at least 10 seconds after set the vehicle to READY/start the engine.
10. Repeat step 8 to 9 two or more times.
11. Select “Self Diagnostic Result” mode of “ABS”.

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

YES >> GO TO 8.
NO >> Inspection End.

8.CHECK WHEEL SENSOR HARNESS

1. Turn the ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) harness connector.
3. Disconnect wheel sensor harness connector.
4. Check the continuity between ABS actuator and electric unit (control unit) harness connector and wheel sensor harness connector. (Check the continuity while turning steering wheel left and right, or while moving center harness in wheel housing.)

- Measurement connector and terminal for power supply circuit

ABS actuator and electric unit (control unit)		Wheel sensor			Continuity
Connector	Terminal	Connector		Terminal	
E125	24	E18	(Front LH wheel)	2	Yes
	12	E43	(Front RH wheel)	2	
	14	E58	(Rear LH wheel)	2	
	26	B60	(Rear RH wheel)	2	

- Measurement connector and terminal for signal circuit

ABS actuator and electric unit (control unit)		Wheel sensor			Continuity
Connector	Terminal	Connector		Terminal	
E125	23	E18	(Front LH wheel)	1	Yes
	11	E43	(Front RH wheel)	1	
	13	E58	(Rear LH wheel)	1	
	25	B60	(Rear RH wheel)	1	

Is the inspection result normal?

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

9.PERFORM SELF-DIAGNOSIS (3)

CONSULT
1. Connect ABS actuator and electric unit (control unit) harness connector.
2. Connect wheel sensor harness connector.
3. Erase “Self Diagnostic Result” mode of “ABS”.
4. Turn the ignition switch OFF → ON → OFF.
NOTE:
Wait at least 10 seconds after turning ignition switch OFF or ON.
5. Set the vehicle to READY/Start the engine.
6. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
NOTE:
Vehicle must be driven after repair or replacement to erase the previous DTCs.
7. Stop the vehicle.
8. Turn the ignition switch OFF.
NOTE:
Wait at least 10 seconds after turning ignition switch OFF.
9. Set the vehicle to READY/Start the engine.
NOTE:

Wait at least 10 seconds after set the vehicle to READY/start the engine.
10. Repeat step 8 to 9 two or more times.
11. Select “Self Diagnostic Result” mode of “ABS”.

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

YES >> GO TO 10.
NO >> Inspection End.

10. REPLACE WHEEL SENSOR

Ⓔ CONSULT
1. Replace the wheel sensor.
- Front: Refer to BRC-13, "Wheel Sensor and Sensor Rotor".
- Rear: Refer to BRC-13, "Wheel Sensor and Sensor Rotor".
2. Erase “Self Diagnostic Result” mode of “ABS”.
3. Turn the ignition switch OFF → ON → OFF.
NOTE:
Wait at least 10 seconds after turning ignition switch OFF or ON.
4. Set the vehicle to READY/Start the engine.
5. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
NOTE:
Vehicle must be driven after repair or replacement to erase the previous DTCs.
6. Stop the vehicle.
7. Turn the ignition switch OFF.
NOTE:
Wait at least 10 seconds after turning ignition switch OFF.
8. Set the vehicle to READY/Start the engine.
NOTE:
Wait at least 10 seconds after set the vehicle to READY/start the engine.
9. Repeat step 7 to 8 two or more times.
10. Select “Self Diagnostic Result” mode of “ABS”.

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

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".
NO >> Inspection End.

C1105, C1106, C1107, C1108 WHEEL SENSOR

DTC Description

INFOID:0000000014895592

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
C1105	RR RH SENSOR-2 (Rear RH wheel sensor-2)	• When power supply voltage of rear RH wheel sensor is low. • When distance between rear RH wheel sensor and rear RH wheel sensor rotor is large. • When installation of rear RH wheel sensor or rear RH wheel sensor rotor is not normal. • When there is contamination on or damage to the rear RH wheel sensor or rear RH sensor rotor.
C1106	RR LH SENSOR-2 (Rear LH wheel sensor-2)	• When power supply voltage of rear LH wheel sensor is low. • When distance between rear LH wheel sensor and rear LH wheel sensor rotor is large. • When installation of rear LH wheel sensor or rear LH wheel sensor rotor is not normal. • When there is contamination on or damage to the rear LH wheel sensor or rear LH sensor rotor.
C1107	FR RH SENSOR-2 (Front RH wheel sensor-2)	• When power supply voltage of front RH wheel sensor is low. • When distance between front RH wheel sensor and front RH wheel sensor rotor is large. • When installation of front RH wheel sensor or front RH wheel sensor rotor is not normal. • When there is contamination on or damage to the front RH wheel sensor or front RH sensor rotor.
C1108	FR LH SENSOR-2 (Front LH wheel sensor-2)	• When power supply voltage of front LH wheel sensor is low. • When distance between front LH wheel sensor and front LH wheel sensor rotor is large. • When installation of front LH wheel sensor or front LH wheel sensor rotor is not normal. • When there is contamination on or damage to the front LH wheel sensor or front LH sensor rotor.

POSSIBLE CAUSE

NOTE:

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

PAST DTC	CRNT DTC
• Harness or connector • Wheel sensor • Sensor rotor • Tire size • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery	• Harness or connector • Wheel sensor • Sensor rotor • ABS actuator and electric unit (control unit) • Tire size • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery • Vehicle was not driven after previous repair

FAIL-SAFE

The following functions are suspended.

- VDC function
- TCS function
- ABS function
- EBD function (only when both 2 rear wheels are malfunctioning)
- Brake limited slip differential (BLSD) function
- Brake assist function
- Brake force distribution function
- hill start assist function
- Active trace control function (control of chassis control module)
- Active ride control function (control of chassis control module)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Set the vehicle to READY/Start the engine.
2. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
3. Stop the vehicle.
4. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
5. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
6. Repeat step 4 to 5 two or more times.
7. Select “Self Diagnostic Result” mode of “ABS”.

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

YES-1 >> “C1105”, “C1106”, “C1107” or “C1108” is displayed by “CRNT”: Proceed to BRC-92, "Diagnosis Procedure".
YES-2 >> “C1105”, “C1106”, “C1107” and “C1108” are displayed by “PAST”: Inspection End (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000014895593

CAUTION:
Never check between wheel sensor harness connector terminals.

1.CHECK WHEEL HUB ASSEMBLY

Check that there is no excessive looseness in front and rear axle.
- Front axle
- 2WD models: Refer to FAX-7, "Inspection".
- AWD models: Refer to FAX-44, "Inspection".
- Rear axle
- 2WD models: Refer to RAX-6, "Inspection".
- AWD models: Refer to RAX-14, "Inspection".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace the wheel hub assembly, and GO TO 2.
- Front: Refer to FAX-9, "Removal and Installation" (2WD), FAX-46, "Removal and Installation" (AWD).
- Rear: Refer to RAX-7, "Removal and Installation" (2WD), RAX-16, "Removal and Installation" (AWD).

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-169, "Diagnosis Procedure".

Is the inspection result normal?

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

3.CHECK TIRE

1. Turn the ignition switch OFF.

2. Check the tire air pressure, wear and size. Refer to WT-74, "Tire Air Pressure".

Is the inspection result normal?

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

4. CHECK DATA MONITOR (1)

CONSULT
1. Erase “Self Diagnostic Result” mode of “ABS”.
2. Turn the ignition switch OFF → ON → OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF or ON.
3. Set the vehicle to READY/Start the engine.
4. Select “ABS” and “Data Monitor”, check “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR” and “RR RH SENSOR”.
   NOTE:
   Set the “Data Monitor” recording speed to “10 msec”.
5. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.
   NOTE:
   Vehicle must be driven after repair or replacement to erase the previous DTCs.

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

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

5. PERFORM SELF-DIAGNOSIS (1)

CONSULT
1. Stop the vehicle.
2. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
3. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
4. Repeat step 2 to 3 two or more times.
5. Select “Self Diagnostic Result” mode of “ABS”.

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

YES >> GO TO 6.
NO >> Inspection End.

6. CHECK WHEEL SENSOR AND SENSOR ROTOR

1. Turn the ignition switch OFF.
2. Disconnect wheel sensor harness connector.
3. Remove dust and foreign matter adhered to the wheel sensor and sensor rotor with a vacuum dust collector through the wheel sensor mounting hole.
   CAUTION:
   Install wheel sensor with no backlash and float, and tighten the mounting bolt to the specified torque.
   - **Front: Refer to BRC-200, "FRONT WHEEL SENSOR : Exploded View".**
   - **Rear: Refer to BRC-201, "REAR WHEEL SENSOR : Exploded View".**

>> GO TO 7.

7. CHECK WHEEL SENSOR

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

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 8.

8. REPLACE WHEEL SENSOR (1)

CONSULT

1. Replace the wheel sensor.
- Front: Refer to BRC-200, "FRONT WHEEL SENSOR : Removal and Installation".
- Rear: Refer to BRC-202, "REAR WHEEL SENSOR : Removal and Installation".
2. Erase “Self diagnostic Result” mode of “ABS”.
3. Turn the ignition switch OFF → ON → OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF or ON.
4. Set the vehicle to READY/Start the engine.
5. Select “ABS” and “Data Monitor”, check “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR” and “RR RH SENSOR”.
   NOTE:
   Set the “Data Monitor” recording speed to “10 msec”.
6. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.
   NOTE:
   Vehicle must be driven after repair or replacement to erase the previous DTCs.

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

YES >> GO TO 9.
NO >> GO TO 21.

9. PERFORM SELF-DIAGNOSIS (2)

CONSULT

1. Stop the vehicle.
2. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
3. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
4. Repeat step 2 to 3 two or more times.
5. Select “Self Diagnostic Result” mode of “ABS”.

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

YES >> GO TO 21.
NO >> Inspection End.

10. CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 13.
NO >> Repair / replace harness or connector, securely lock the connector, and GO TO 11.

11. CHECK DATA MONITOR (2)

CONSULT

1. Erase “Self diagnostic Result” mode of “ABS”.
2. Turn the ignition switch OFF → ON → OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF or ON.
3. Set the vehicle to READY/Start the engine.
4. Select “ABS” and “Data Monitor”, check “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR” and “RR RH SENSOR”.
   NOTE:
   Set the “Data Monitor” recording speed to “10 msec”.

5. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.
NOTE:
Vehicle must be driven after repair or replacement to erase the previous DTCs.

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

YES >> GO TO 12.
NO >> GO TO 13.

12. PERFORM SELF-DIAGNOSIS (3)

CONSULT
1. Stop the vehicle.
2. Turn the ignition switch OFF.
NOTE:
Wait at least 10 seconds after turning ignition switch OFF.
3. Set the vehicle to READY/Start the engine.
NOTE:
Wait at least 10 seconds after set the vehicle to READY/start the engine.
4. Repeat step 2 to 3 two or more times.
5. Select “Self Diagnostic Result” mode of “ABS”.

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

YES >> GO TO 13.
NO >> Inspection End.

13. CHECK TERMINAL

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

Is the inspection result normal?

YES >> GO TO 16.
NO >> Repair / replace harness, connector, or terminal, and GO TO 14.

14. CHECK DATA MONITOR (3)

CONSULT
1. Connect ABS actuator and electric unit (control unit) harness connector.
2. Connect wheel sensor harness connector.
3. Erase “Self diagnostic Result” mode of “ABS”.
4. Turn the ignition switch OFF → ON → OFF.
NOTE:
Wait at least 10 seconds after turning ignition switch OFF or ON.
5. Set the vehicle to READY/Start the engine.
6. Select “ABS” and “Data Monitor”, check “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR” and “RR RH SENSOR”.
NOTE:
Set the “Data Monitor” recording speed to “10 msec”.
7. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.
NOTE:
Vehicle must be driven after repair or replacement to erase the previous DTCs.

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

YES >> GO TO 15.
NO >> GO TO 16.

15. PERFORM SELF-DIAGNOSIS (4)

CONSULT
1. Stop the vehicle.

2. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
3. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
4. Repeat step 2 to 3 two or more times.
5. Select “Self Diagnostic Result”mode of “ABS”.

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

YES >> GO TO 16.
NO >> Inspection End.

16. CHECK WHEEL SENSOR HARNESS

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

ABS actuator and electric unit (control unit)		Ground	Continuity
Connector	Terminal		
E125	23, 24	—	No
	11, 12		
	13, 14		
	25, 26		

Is the inspection result normal?

YES >> GO TO 17.
NO >> Repair / replace harness or connector, and GO TO 17.

17. CHECK DATA MONITOR (4)

CONSULT
1. Connect ABS actuator and electric unit (control unit) harness connector.
2. Connect wheel sensor harness connector.
3. Erase “Self Diagnostic Result” for “ABS”.
4. Turn the ignition switch OFF → ON → OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF or ON.
5. Set the vehicle to READY/Start the engine.
6. Select “ABS” and “Data Monitor”, check “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR” and “RR RH SENSOR”.
   NOTE:
   Set the “Data Monitor” recording speed to “10 msec”.
7. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.
   NOTE:
   Vehicle must be driven after repair or replacement to erase the previous DTCs.

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

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

18. PERFORM SELF-DIAGNOSIS (5)

CONSULT
1. Stop the vehicle.
2. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.

3. Set the vehicle to READY/Start the engine.
NOTE:
Wait at least 10 seconds after set the vehicle to READY/start the engine.
4. Repeat step 2 to 3 two or more times.
5. Select “Self Diagnostic Result”mode of “ABS”.

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

YES >> GO TO 19.
NO >> Inspection End.

19.REPLACE WHEEL SENSOR (2)

CONSULT
1. Replace the wheel sensor.
- Front: Refer to BRC-200, "FRONT WHEEL SENSOR : Removal and Installation".
- Rear: Refer to BRC-202, "REAR WHEEL SENSOR : Removal and Installation".
2. Erase “Self diagnostic Result” mode of “ABS”.
3. Turn the ignition switch OFF → ON → OFF.
NOTE:
Wait at least 10 seconds after turning ignition switch OFF or ON.
4. Set the vehicle to READY/Start the engine.
5. Select “ABS” and “Data Monitor”, check “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR” and “RR RH SENSOR”.
NOTE:
Set the “Data Monitor” recording speed to “10 msec”.
6. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.
NOTE:
Vehicle must be driven after repair or replacement to erase the previous DTCs.

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

YES >> GO TO 20.
NO >> GO TO 21.

20.PERFORM SELF-DIAGNOSIS (6)

CONSULT
1. Stop the vehicle.
2. Turn the ignition switch OFF.
NOTE:
Wait at least 10 seconds after turning ignition switch OFF.
3. Set the vehicle to READY/Start the engine.
NOTE:
Wait at least 10 seconds after set the vehicle to READY/start the engine.
4. Repeat step 2 to 3 two or more times.
5. Select “Self Diagnostic Result” mode of “ABS”.

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

YES >> GO TO 21.
NO >> Inspection End.

21.REPLACE SENSOR ROTOR

CONSULT
1. Replace the sensor rotor.
- Front: Refer to BRC-203, "FRONT SENSOR ROTOR : Removal and Installation - Front Sensor Rotor".
- Rear: Refer to BRC-203, "REAR SENSOR ROTOR : Removal and Installation - Rear Sensor Rotor".
2. Erase “Self Diagnostic Result” mode of “ABS”.
3. Turn the ignition switch OFF → ON → OFF.
NOTE:
Wait at least 10 seconds after turning ignition switch OFF or ON.
4. Set the vehicle to READY/Start the engine.
5. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
NOTE:

Vehicle must be driven after repair or replacement to erase the previous DTCs.

6. Stop the vehicle.
7. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
8. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
9. Repeat step 7 to 8 two or more times.
10. Select “Self Diagnostic Result” mode of “ABS”.

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

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".

NO >> Inspection End.

C1109 POWER AND GROUND SYSTEM

DTC Description

INFOID:0000000014895594

DTC DETECTION LOGIC

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

POSSIBLE CAUSE

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

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery • Charge system	• Harness or connector • ABS actuator and electric unit (control unit) • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery • Charge system

FAIL-SAFE

The following functions are suspended.
- VDC function
- TCS function
- ABS function
- EBD function
- Brake limited slip differential (BLSD) function
- Brake assist function
- Brake force distribution function
- hill start assist function
- Active trace control function (control of chassis control module)
- Active ride control function (control of chassis control module)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1109” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-100, "Diagnosis Procedure".

YES-2 >> “PAST” is displayed: Inspection End (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000014895595

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.PERFORM SELF-DIAGNOSIS

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnsotic Result” mode of “ABS”.

Is DTC “C1109” detected?

YES >> GO TO 3.
NO >> Inspection End.

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-169, "Diagnosis Procedure".

Is the inspection result normal?

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

4.CHECK TERMINAL

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

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".
NO >> Repair / replace harness, connector, or terminal.

C1111 ABS MOTOR, MOTOR RELAY SYSTEM

DTC Description

INFOID:0000000014895596

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
C1111	PUMP MOTOR (Pump motor and motor relay)	When a malfunction is detected in motor or motor relay.

POSSIBLE CAUSE

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

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery	• Harness or connector • ABS actuator and electric unit (control unit) • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery

FAIL-SAFE

The following functions are suspended.
- VDC function
- TCS function
- ABS function
- Brake limited slip differential (BLSD) function
- Brake assist function
- hill start assist function
- Brake force distribution function
- Active trace control function (control of chassis control module)
- Active ride control function (control of chassis control module)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Turn the ignition switch OFF → ON, and wait 30 seconds.
2. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
3. Stop the vehicle.
4. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
5. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
6. Repeat step 4 to 5 two or more times.
7. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1111” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-102, "Diagnosis Procedure".

YES-2 >> “PAST” is displayed: Inspection End (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End

Diagnosis Procedure

INFOID:0000000014895597

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.PERFORM SELF-DIAGNOSIS

CONSULT
1. Turn the ignition switch OFF → ON, and wait 30 seconds.
2. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
   NOTE:
   Vehicle must be driven after repair or replacement to erase the previous DTCs.
3. Stop the vehicle.
4. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
5. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
6. Repeat step 4 to 5 two or more times.
7. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1111” detected?

YES >> GO TO 3.
NO >> Inspection End.

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-169, "Diagnosis Procedure".

Is the inspection result normal?

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

4.ERASE SELF-DIAGNOSIS RESULT (1)

CONSULT
1. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
   NOTE:
   Vehicle must be driven after repair or replacement to erase the previous DTCs.
2. Stop the vehicle.
3. Erase “Self Diagnostic Result” for “ABS”.
4. Turn the ignition switch OFF → ON → OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF or ON.

>> Inspection End

5.CHECK TERMINAL

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

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".

NO >> Repair / replace harness or connector, andGO TO 6.

6. ERASE SELF-DIAGNOSIS RESULT (2)

CONSULT

1. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
   NOTE:
   Vehicle must be driven after repair or replacement to erase the previous DTCs.
2. Stop the vehicle.
3. Erase “Self Diagnostic Result” mode of “ABS”.
4. Turn the ignition switch OFF → ON → OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF or ON.

>> Inspection End.

C1115 WHEEL SENSOR

DTC Description

INFOID:0000000014895598

DTC DETECTION LOGIC

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

POSSIBLE CAUSE

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

PAST DTC	CRNT DTC
• Harness or connector • Wheel sensor • Sensor rotor • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery	• Harness or connector • Wheel sensor • Sensor rotor • ABS actuator and electric unit (control unit) • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery • Tire size

FAIL-SAFE

The following functions are suspended.
- VDC function
- TCS function
- ABS function
- EBD function
- Brake limited slip differential (BLSD) function
- Brake assist function
- Brake force distribution function
- hill start assist function
- Active trace control function (control of chassis control module)
- Active ride control function (control of chassis control module)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Set the vehicle to READY/Start the engine.
2. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
3. Stop the vehicle.
4. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
5. Set the vehicle to READY/Start the engine.
   NOTE:

Wait at least 10 seconds after set the vehicle to READY/start the engine.
6. Repeat step 4 to 5 two or more times.
7. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1115” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-105, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: Inspection End (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End

Diagnosis Procedure

INFOID:0000000014895599

CAUTION:
Never check between wheel sensor harness connector terminals.

1.CHECK TIRE

Check the tire air pressure, wear and size. Refer to WT-74, "Tire Air Pressure".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Adjust air pressure or replace tire and GO TO 2.

2.CHECK DATA MONITOR (1)

CONSULT
1. Erase “Self Diagnostic Result” for “ABS”.
2. Turn the ignition switch OFF → ON → OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF or ON.
3. Set the vehicle to READY/Start the engine.
4. Select “ABS” and “Data Monitor”, check “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR” and “RR RH SENSOR”.
   NOTE:
   Set the “Data Monitor” recording speed to “10 msec”.
5. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.
   NOTE:
   Vehicle must be driven after repair or replacement to erase the previous DTCs.

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

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

3.PERFORM SELF-DIAGNOSIS (1)

CONSULT
1. Stop the vehicle.
2. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
3. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
4. Repeat step 2 to 3 two or more times.
5. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1115” detected?

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

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-169, "Diagnosis Procedure".

Is the inspection result normal?

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

5. CHECK WHEEL SENSOR AND SENSOR ROTOR

1. Turn the ignition switch OFF.
2. Disconnect wheel sensor harness connector.
3. Remove dust and foreign matter adhered to the wheel sensor and sensor rotor with a vacuum dust collector through the wheel sensor mounting hole.
   CAUTION:
   Install wheel sensor with no backlash and float, and tighten the mounting bolt to the specified torque.
   - **Front: Refer to BRC-200, "FRONT WHEEL SENSOR : Exploded View".**
   - **Rear: Refer to BRC-201, "REAR WHEEL SENSOR : Exploded View".**

>> GO TO 6.

6. CHECK WHEEL SENSOR

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

Is the inspection result normal?

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

7. REPLACE WHEEL SENSOR (1)

CONSULT
1. Replace the wheel sensor.
- Front: Refer to BRC-200, "FRONT WHEEL SENSOR : Removal and Installation".
- Rear: Refer to BRC-202, "REAR WHEEL SENSOR : Removal and Installation".
2. Erase “Self Diagnostic Result” mode of “ABS”.
3. Turn the ignition switch OFF → ON → OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF or ON.
4. Set the vehicle to READY/Start the engine.
5. Select “ABS” and “Data Monitor”, check “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR” and “RR RH SENSOR”.
   NOTE:
   Set the “Data Monitor” recording speed to “10 msec”.
6. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.
   NOTE:
   Vehicle must be driven after repair or replacement to erase the previous DTCs.

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

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

8. PERFORM SELF-DIAGNOSIS (2)

CONSULT
1. Stop the vehicle.
2. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
3. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
4. Repeat step 2 to 3 two or more times.
5. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1115” detected?

YES >> GO TO 9.
NO >> Inspection End.

9.CHECK CONNECTOR

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

Is the inspection result normal?

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

10.CHECK DATA MONITOR (2)

CONSULT
1. Erase “Self Diagnostic Result” mode of “ABS”.
2. Turn the ignition switch OFF → ON → OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF or ON.
3. Set the vehicle to READY/Start the engine.
4. Select “ABS” and “Data Monitor”, check “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR” and “RR RH SENSOR”.
   NOTE:
   Set the “Data Monitor” recording speed to “10 msec”.
5. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.
   NOTE:
   Vehicle must be driven after repair or replacement to erase the previous DTCs.

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

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

11.PERFORM SELF-DIAGNOSIS (3)

CONSULT
1. Stop the vehicle.
2. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
3. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
4. Repeat step 2 to 3 two or more times.
5. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1115” detected?

YES >> GO TO 12.
NO >> Inspection End.

12.CHECK TERMINAL

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

Is the inspection result normal?

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

13.CHECK DATA MONITOR (3)

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

2. Connect wheel sensor harness connector.
3. Erase “Self Diagnostic Result” for “ABS”.
4. Turn the ignition switch OFF → ON → OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF or ON.
5. Set the vehicle to READY/Start the engine.
6. Select “ABS” and “Data Monitor”, check “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR” and “RR RH SENSOR”.
   NOTE:
   Set the “Data Monitor” recording speed to “10 msec”.
7. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.
   NOTE:
   Vehicle must be driven after repair or replacement to erase the previous DTCs.

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

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

14. PERFORM SELF-DIAGNOSIS (4)

CONSULT

1. Stop the vehicle.
2. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
3. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
4. Repeat step 2 to 3 two or more times.
5. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1115” detected?

YES >> GO TO 15.
NO >> Inspection End.

15. CHECK WHEEL SENSOR HARNESS

1. Turn the ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) harness connector.
3. Disconnect wheel sensor harness connector.
4. Check the continuity between ABS actuator and electric unit (control unit) harness connector and wheel sensor harness connector. (Check continuity while turning steering wheel left and right, or while moving center harness in wheel housing.)

- Measurement connector and terminal for power supply circuit

ABS actuator and electric unit (control unit)		Wheel sensor			Continuity
Connector	Terminal	Connector		Terminal	
E125	23	E16	(Front LH wheel)	1	Yes
	11	E43	(Front RH wheel)	1	
	13	B58	(Rear LH wheel)	1	
	25	B60	(Rear RH wheel)	1	

- Measurement connector and terminal for signal circuit

ABS actuator and electric unit (control unit)		Wheel sensor			Continuity
Connector	Terminal	Connector		Terminal	
E125	24	E16	(Front LH wheel)	2	Yes
	12	E43	(Front RH wheel)	2	
	14	B58	(Rear LH wheel)	2	
	26	B60	(Rear RH wheel)	2	

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

ABS actuator and electric unit (control unit)		Ground	Continuity
Connector	Terminal		
E125	23, 24	—	No
	11, 12		
	13, 14		
	25, 26		

Is the inspection result normal?

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

16. CHECK DATA MONITOR (4)

CONSULT
1. Connect ABS actuator and electric unit (control unit) harness connector.
2. Connect wheel sensor harness connector.
3. Erase “Self Diagnostic Result” for “ABS”.
4. Turn the ignition switch OFF → ON → OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF or ON.
5. Set the vehicle to READY/Start the engine.
6. Select “ABS” and “Data Monitor”, check “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR” and “RR RH SENSOR”.
   NOTE:
   Set the “Data Monitor” recording speed to “10 msec”.
7. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.
   NOTE:
   Vehicle must be driven after repair or replacement to erase the previous DTCs.

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

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

17. PERFORM SELF-DIAGNOSIS (5)

CONSULT
1. Stop the vehicle.
2. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
3. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
4. Repeat step 2 to 3 two or more times.
5. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1115” detected?

YES >> GO TO 19.

NO >> Inspection End.

18. REPLACE WHEEL SENSOR (2)

CONSULT

1. Replace the wheel sensor.
- Front: Refer to BRC-200, "FRONT WHEEL SENSOR : Removal and Installation".
- Rear: Refer to BRC-202, "REAR WHEEL SENSOR : Removal and Installation".
2. Erase “Self Diagnostic Result” mode of “ABS”.
3. Turn the ignition switch OFF → ON → OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF or ON.
4. Set the vehicle to READY/Start the engine.
5. Select “ABS” and “Data Monitor”, check “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR” and “RR RH SENSOR”.
   NOTE:
   Set the “Data Monitor” recording speed to “10 msec”.
6. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.
   NOTE:
   Vehicle must be driven after repair or replacement to erase the previous DTCs.

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

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

19. PERFORM SELF-DIAGNOSIS (6)

CONSULT

1. Stop the vehicle.
2. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
3. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
4. Repeat step 2 to 3 two or more times.
5. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1115” detected?

YES >> GO TO 20.
NO >> Inspection End.

20. REPLACE SENSOR ROTOR

CONSULT

1. Replace the sensor rotor.
- Front: Refer to BRC-203, "FRONT SENSOR ROTOR : Removal and Installation - Front Sensor Rotor".
- Rear: Refer to BRC-203, "REAR SENSOR ROTOR : Removal and Installation - Rear Sensor Rotor".
2. Erase “Self Diagnostic Result” for “ABS”.
3. Turn the ignition switch OFF → ON → OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF or ON.
4. Set the vehicle to READY/Start the engine.
5. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
   NOTE:
   Vehicle must be driven after repair or replacement to erase the previous DTCs.
6. Stop the vehicle.
7. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
8. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.

9. Repeat step 7 to 8 two or more times.
10. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1115” detected?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".
NO >> Inspection End.

C1116 STOP LAMP SWITCH

DTC Description

INFOID:0000000014895600

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
C1116	STOP LAMP SW (Stop lamp switch)	When stop lamp switch signal is not input when brake pedal operates.

POSSIBLE CAUSE

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

PAST DTC	CRNT DTC
• Harness or connector • Stop lamp switch signal circuit	• Harness or connector • Stop lamp switch • ABS actuator and electric unit (control unit) • ABS actuator and electric unit (control unit) power supply system • BCM • Fuse • Fusible link • 12V battery

FAIL-SAFE

The following functions are suspended.
- VDC function
- TCS function
- Brake assist function
- Brake force distribution function
- hill start assist function
- Active trace control function (control of chassis control module)
- Active ride control function (control of chassis control module)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Turn the ignition switch OFF, and wait 10 seconds or more.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Stop the vehicle.
3. Wait 1 minute or more.
   NOTE:
   Never depress brake pedal.
4. Depress brake pedal by 100 mm (3.94 in) or more, and maintain at that position for a minimum of 1 minute or more.
5. Release brake pedal, and wait 1 minute or more.
6. Repeat step 4 to 5 ten or more times.
7. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.

8. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
9. Repeat step 7 to 8 two or more times.
10. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1116” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-113, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: Inspection End (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End

Diagnosis Procedure

INFOID:0000000014895601

1.CHECK BCM SYSTEM

CONSULT
Select “Self Diagnostic Result” mode of “BCM”. Refer to BCS-24, "BCM : CONSULT Function (BCM - BCM)".

Is DTC detected?

YES >> Check the DTC. Refer to BCS-48, "DTC Index".
NO >> GO TO 2.

2.CHECK CONNECTOR AND TERMINAL

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

Is the inspection result normal?

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

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

CONSULT
1. Connect BCM harness connector.
2. Connect ABS actuator and electric unit (control unit) harness connector.
3. Erase “Self Diagnostic Result” mode of “ABS”.
4. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
5. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
6. Repeat step 4 to 5 two or more times.
7. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1116” or “U1000” detected?

YES (“C1116”)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".
YES (“U1000”)>>Refer to LAN-26, "Trouble Diagnosis Flow Chart".
NO >> Inspection End.

C1120, C1122, C1124, C1126 ABS IN VALVE SYSTEM

DTC Description

INFOID:0000000014895602

DTC DETECTION LOGIC

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

POSSIBLE CAUSE

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

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery	• Harness or connector • ABS actuator and electric unit (control unit) • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery

FAIL-SAFE

The following functions are suspended.
- VDC function
- TCS function
- ABS function
- EBD function
- Brake limited slip differential (BLSD) function
- Brake assist function
- Brake force distribution function
- hill start assist function
- Active trace control function (control of chassis control module)
- Active ride control function (control of chassis control module)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.

3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnostic Result” mode of “ABS”.

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

YES-1 >> “C1120”, “C1122”, “C1124” or “C1126” is displayed by “CRNT”: Proceed to BRC-115, "Diagnosis Procedure".
YES-2 >> “C1120”, “C1122”, “C1124” or “C1126” is displayed by “PAST”: Inspection End (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End

Diagnosis Procedure

INFOID:0000000014895603

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.PERFORM SELF-DIAGNOSIS

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnostic Result” mode of “ABS”.

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

YES >> GO TO 3.
NO >> Inspection End.

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-169, "Diagnosis Procedure".

Is the inspection result normal?

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

4.CHECK TERMINAL

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

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".
NO >> Repair / replace harness, connector, or terminal.

C1121, C1123, C1125, C1127 ABS OUT VALVE SYSTEM

DTC Description

INFOID:0000000014895604

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
C1121	FR LH OUT ABS SOL (Front LH ABS OUT solenoid valve)	When a malfunction is detected in front LH ABS OUT valve.
C1123	FR RH OUT ABS SOL (Front RH ABS OUT solenoid valve)	When a malfunction is detected in front RH ABS OUT valve.
C1125	RR LH OUT ABS SOL (Rear LH ABS OUT solenoid valve)	When a malfunction is detected in rear LH ABS OUT valve.
C1127	RR RH OUT ABS SOL (Rear RH ABS OUT solenoid valve)	When a malfunction is detected in rear RH ABS OUT valve.

POSSIBLE CAUSE

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

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery	• Harness or connector • ABS actuator and electric unit (control unit) • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery

FAIL-SAFE

The following functions are suspended.
- VDC function
- TCS function
- ABS function
- EBD function
- Brake limited slip differential (BLSD) function
- Brake assist function
- Brake force distribution function
- hill start assist function
- Active trace control function (control of chassis control module)
- Active ride control function (control of chassis control module)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.

3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnostic Result” mode of “ABS”.

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

YES-1 >> “C1121”, “C1123”, “C1125” or “C1127” is displayed by “CRNT”: Proceed to BRC-117, "Diagnosis Procedure".
YES-2 >> “C1121”, “C1123”, “C1125” and “C1127” are displayed by “PAST”: Inspection End. (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000014895605

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.PERFORM SELF-DIAGNOSIS

With CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnostic Result” mode of “ABS”.

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

YES >> GO TO 3.
NO >> Inspection End.

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-169, "Diagnosis Procedure".

Is the inspection result normal?

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

4.CHECK TERMINAL

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

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".
NO >> Repair / replace harness, connector, or terminal.

C1130 ENGINE SIGNAL

DTC Description

INFOID:0000000014895606

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
C1130	ENGINE SIGNAL 1 (Engine system signal)	When a malfunction is detected in ECM system.

POSSIBLE CAUSE

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

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery • CAN communication line	• Harness or connector • ECM • ABS actuator and electric unit (control unit) • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery • CAN communication line

FAIL-SAFE

The following functions are suspended.
- VDC function
- TCS function
- Brake limited slip differential (BLSD) function
- Brake force distribution function
- hill start assist function
- Active trace control function (control of chassis control module)
- Active ride control function (control of chassis control module)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1130” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-119, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: Inspection End (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End

Diagnosis Procedure

INFOID:0000000014895607

1.CHECK ENGINE SYSTEM

CONSULT
Select “Select Diagnostic Result” mode of “ENGINE”. Refer to EC-78, "CONSULT Function".

Is DTC detected?

YES >> Check the DTC. Refer to EC-109, "DTC Index".
NO >> GO TO 2.

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-169, "Diagnosis Procedure".

Is the inspection result normal?

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

3.CHECK CONNECTOR AND TERMINAL

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

Is the inspection result normal?

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

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

CONSULT
1. Connect ECM harness connector.
2. Connect ABS actuator and electric unit (control unit) harness connector.
3. Erase “Select Diagnostic Result” mode of “ABS”.
4. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
5. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
6. Repeat step 4 to 5 two or more times.
7. Select “Select Diagnostic Result” mode of “ABS”.

Is DTC “C1130” or “U1000”detected?

YES (“C1130”)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".
YES (“U1000”)>>Refer to LAN-26, "Trouble Diagnosis Flow Chart".
NO >> Inspection End,

C1140 ACTUATOR RELAY SYSTEM

DTC Description

INFOID:0000000014895608

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
C1140	ACTUATOR RLY (Actuator relay)	When a malfunction is detected in actuator relay.

POSSIBLE CAUSE

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

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery	• Harness or connector • ABS actuator and electric unit (control unit) • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery

FAIL-SAFE

The following functions are suspended.
- VDC function
- TCS function
- ABS function
- EBD function
- Brake limited slip differential (BLSD) function
- Brake assist function
- Brake force distribution function
- hill start assist function
- Active trace control function (control of chassis control module)
- Active ride control function (control of chassis control module)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1140” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-121, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: Inspection End (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".

NO-2 >> Confirmation after repair: Insectaries End.

Diagnosis Procedure

INFOID:0000000014895609

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.PERFORM SELF-DIAGNOSIS

CONSULT

1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1140” detected?

YES >> GO TO 3.
NO >> Inspection End.

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-169, "Diagnosis Procedure".

Is the inspection result normal?

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

4.CHECK TERMINAL

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

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".
NO >> Repair / replace harness, connector, or terminal.

C1142 PRESS SENSOR

DTC Description

INFOID:0000000014895610

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
C1142	PRESS SEN CIRCUIT (Pressure sensor circuit)	When a malfunction is detected in pressure sensor.

POSSIBLE CAUSE

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

PAST DTC	CRNT DTC
• Harness or connector • Air inclusion in the brake piping • Stop lamp switch system • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery	• Harness or connector • Stop lamp switch system • ABS actuator and electric unit (control unit) • Brake system • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery • Air inclusion in the brake piping

FAIL-SAFE

The following functions are suspended.
- VDC function
- TCS function
- Brake limited slip differential (BLSD) function
- Brake assist function
- Brake force distribution function
- hill start assist function
- Active trace control function (control of chassis control module)
- Active ride control function (control of chassis control module)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1142” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-123, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: Inspection End (Erase the memory of self-diagnosis results.)

NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000014895611

1.STOP LAMP SWITCH SYSTEM

Check the stop lamp switch system. Refer to BRC-112, "DTC Description".

Is the inspection result normal?

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

2.CHECK BRAKE FLUID LEAKAGE

Check the brake fluid leakage. Refer to BR-51, "Inspection".

Is the inspection result normal?

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

3.CHECK BRAKE PIPING

Check brake piping.
- Front: Refer to BR-59, "FRONT : Exploded View".
- Rear: Refer to BR-62, "REAR : Exploded View".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace brake piping.
- Front: Refer to BR-60, "FRONT : Removal and Installation".
- Rear: Refer to BR-63, "REAR : Removal and Installation".

4.CHECK BRAKE PEDAL

Check the brake pedal.
- Brake pedal height: Refer to BR-59, "FRONT : Exploded View".
- Brake pedal assembly: Refer to BR-62, "REAR : Exploded View".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Adjust the brake pedal height or replace brake pedal assembly.
- Adjust the brake pedal: Refer to BR-49, "Adjustment".
- Replace the brake pedal: Refer to BR-57, "Removal and Installation".

5.CHECK HYDRAULIC BRAKE BOOSTER UNIT

Check brake booster unit. Refer to BR-65, "Exploded View".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Replace hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".

6.CHECK FRONT DISC BRAKE

Check the front disc brake. Refer to BR-53, "DISC BRAKE ROTOR : Inspection and Adjustment".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair or replace front disc brake. Refer to BR-73, "DISC BRAKE ROTOR : Removal and Installation".

7.CHECK REAR DISC BRAKE

Check the rear disc brake. Refer to BR-55, "DISC BRAKE ROTOR : Inspection and Adjustment".

Is the inspection result normal?

YES >> GO TO 8.
NO >> Repair or replace rear disc brake. Refer to BR-79, "DISC BRAKE ROTOR : Removal and Installation".

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

CUIT

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-169, "Diagnosis Procedure".

Is the inspection result normal?

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

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

CONSULT
1. Erase “Self Diagnostic Result” mode of “ABS”.
2. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
3. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
4. Set the vehicle to READY/Start the engine and drive the vehicle for a short period of time.
   NOTE:
   Vehicle must be driven after repair or replacement to erase the previous DTCs.
5. Stop the vehicle.
6. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1142” detected?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".
NO >> Check the ABS actuator and electric unit (control unit) harness connector and terminal for damage, looseness and disconnection. Repair / replace harness, connector, or terminal.

C1143 STEERING ANGLE SENSOR

DTC Description

INFOID:0000000014895612

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
C1143	ST ANG SEN CIRCUIT (Steering angle sensor circuit)	When a malfunction is detected in steering angle sensor.

POSSIBLE CAUSE

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

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery • CAN communication line • Incomplete neutral position adjustment of steering angle sensor • Improper installation of steering angle sensor	• Harness or connector • Steering angle sensor • ABS actuator and electric unit (control unit) • Fuse block (J/B) • CAN communication line • Wheel alignment • Incomplete neutral position adjustment of steering angle sensor • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery

FAIL-SAFE

The following functions are suspended.
- VDC function
- TCS function
- Brake limited slip differential (BLSD) function
- Brake force distribution function
- hill start assist function
- Active trace control function (control of chassis control module)
- Active ride control function (control of chassis control module)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1143” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-126, "Diagnosis Procedure".

YES-2 >> “PAST” is displayed: Inspection End (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000014895613

1. ADJUST THE NEUTRAL POSITION OF STEERING ANGLE SENSOR

CONSULT
Perform neutral position adjustment of steering angle sensor. Refer to BRC-77, "Description".

>> GO TO 2.

2. PERFORM SELF-DIAGNOSIS (1)

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1143” detected?

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

3. CHECK CONNECTOR

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

Is the inspection result normal?

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

4. PERFORM SELF-DIAGNOSIS (2)

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1143” detected?

YES >> GO TO 5.
NO >> Inspection End.

5. CHECK STEERING ANGLE SENSOR POWER SUPPLY

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

Terminals			Voltage (Approx.)
(+)		(–)	
Steering angle sensor		Ground	
Connector	Terminal		
M56	4	—	0 V

4. Turn the ignition switch ON.
NOTE:
Set the vehicle to READY/Start the engine.
5. Check the voltage between steering angle sensor harness connector and ground.

Terminals			Voltage (Approx.)
(+)		(–)	
Steering angle sensor		Ground	
Connector	Terminal		
M56	4	—	10 – 16 V

Is the inspection result normal?

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

6. CHECK STEERING ANGLE SENSOR POWER SUPPLY CIRCUIT

1. Turn the ignition switch OFF.
2. Check the 10A fuse (#30).
3. Disconnect fuse block (J/B) harness connector.
4. Check the continuity between steering angle sensor harness connector and fuse block (J/B) harness connector.

Steering angle sensor		Fuse block (J/B)		Continuity
Connector	Terminal	Connector	Terminal	
M56	4	M68	2R	Yes

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

Steering angle sensor		Ground	Continuity
Connector	Terminal		
M56	4	—	No

Is the inspection result normal?

YES >> Perform trouble diagnosis for ignition power supply. Refer to PG-44, "Wiring Diagram - IGNITION POWER SUPPLY -".
NO >> Repair / replace harness, connector, or fuse.

7. CHECK STEERING ANGLE SENSOR GROUND CIRCUIT

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

Steering angle sensor		Ground	Continuity
Connector	Terminal		
M56	1	—	Yes

Is the inspection result normal?

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

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

CUIT

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-169, "Diagnosis Procedure".

Is the inspection result normal?

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

9. CHECK TERMINAL

1. Check the steering angle sensor pin terminals for damage or loose connection with harness connector.
2. Check the fuse block (J/B) pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

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

10. CHECK CAN COMMUNICATION LINE

1. Connect steering angle sensor harness connector.
2. Connect fuse block (J/B) harness connector.
3. Check the CAN communication line. Refer to LAN-26, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

YES >> GO TO 11.
NO >> Repair / replace harness or connector. Refer to BRC-8, "Precaution for Harness Repair".

11. CHECK DATA MONITOR

CONSULT
1. “ABS”, “Data Monitor” and “STR ANGLE SIG” according to this order.
2. Check that the indication changes with the steering angle when the steering wheel is turned left/right from the neutral position. Refer to BRC-54, "Reference Value".

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".
NO >> Replace the steering angle sensor. Refer to BRC-208, "Removal and Installation".

C1144 INCOMPLETE STEERING ANGLE SENSOR ADJUSTMENT

DTC Description

INFOID:0000000014895614

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
C1144	ST ANG SEN SIGNAL (Steering angle sensor not complete)	When neutral position adjustment of steering angle sensor is not complete.

POSSIBLE CAUSE

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

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

FAIL-SAFE

The following functions are suspended.
- VDC function
- TCS function
- Brake force distribution function
- hill start assist function
- Active trace control function (control of chassis control module)
- Active ride control function (control of chassis control module)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1144” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-129, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: Inspection End (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000014895615

1.ADJUST THE NEUTRAL POSITION OF STEERING ANGLE SENSOR

Perform neutral position adjustment of steering angle sensor. Refer to BRC-77, "Description".

>> GO TO 2.

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

CONSULT

1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1144” detected?

YES >> GO TO 3.
NO >> Inspection End

3. CHECK STEERING ANGLE SENSOR SYSTEM

1. Turn the ignition switch OFF.
2. Check the steering angle sensor system. Refer to BRC-125, "DTC Description".

Is the inspection result normal?

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

4. CHECK DATA MONITOR

CONSULT

1. “ABS”, “Data Monitor” and “STR ANGLE SIG” according to this order.
2. Check that the indication changes with the steering angle when the steering wheel is turned left/right from the neutral position. Refer to BRC-54, "Reference Value".

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".
NO >> Replace the steering angle sensor. Refer to BRC-208, "Removal and Installation".

C1145, C1146 YAW RATE/SIDE G SENSOR

DTC Description

INFOID:0000000014895616

DTC DETECTION LOGIC

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

POSSIBLE CAUSE

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

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery	ABS actuator and electric unit (control unit)

FAIL-SAFE

The following functions are suspended.
- VDC function
- TCS function
- ABS function (AWD models)
- Brake assist function (AWD models)
- Brake force distribution function
- hill start assist function
- Active trace control function (control of chassis control module)
- Active ride control function (control of chassis control module)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1145” or “C1146” detected?

YES-1 >> “C1145” or “C1146” is displayed by “CRNT”: Proceed to BRC-132, "Diagnosis Procedure".
YES-2 >> “C1145” and “C1146” are displayed by “PAST”: Inspection End (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".

NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000014895617

1.CHECK SELF-DIAGNOSIS RESULTS

CONSULT

Replace the ABS actuator and electric unit (control unit) even if other DTCs are displayed along with “C1145” or “C1146” in self-diagnosis for “ABS”.

>> Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".

C1155 BRAKE FLUID LEVEL SWITCH

DTC Description

INFOID:0000000014895618

DTC DETECTION LOGIC

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

POSSIBLE CAUSE

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

PAST DTC	CRNT DTC
• Harness or connector • Brake fluid level is low	• Harness or connector • ABS actuator and electric unit (control unit) • Brake fluid level switch • Combination meter • Brake fluid level is low

FAIL-SAFE

The following functions are suspended.
- VDC function
- TCS function
- Brake assist function
- Brake force distribution function
- hill start assist function
- Active trace control function (control of chassis control module)
- Active ride control function (control of chassis control module)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1155” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-134, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: Inspection End (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000014895619

1.CHECK BRAKE FLUID LEVEL

1. Turn the ignition switch OFF.
2. Check the brake fluid level. Refer to BR-51, "Inspection".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Refill brake fluid. Refer to BR-51, "Drain and Refill". GO TO 2.

2.PERFORM SELF-DIAGNOSIS (1)

CONSULT
1. Erase “Self Diagnostic Result” mode of “ABS”.
2. Turn the ignition switch OFF → ON → OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF or ON.
3. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
4. Repeat step 2 to 3 two or more times.
5. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1155” detected?

YES >> GO TO 3.
NO >> Inspection End.

3.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Check the brake fluid level switch harness connector for disconnection or looseness.
3. Check the combination meter harness connector for disconnection or looseness.

Is the inspection result normal?

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

4.PERFORM SELF-DIAGNOSIS (2)

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1155” detected?

YES >> GO TO 5.
NO >> Inspection End.

5.CHECK BRAKE FLUID LEVEL SWITCH

Check the brake fluid level switch. Refer to BRC-136, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace hydraulic brake booster unit. Refer to BR-65, "Removal and Installation". GO TO 6.

6.PERFORM SELF-DIAGNOSIS (3)

CONSULT
1. Erase “Self Diagnostic Result” mode of “ABS”.
2. Turn the ignition switch OFF → ON → OFF.
   NOTE:

Wait at least 10 seconds after turning ignition switch OFF or ON.
3. Set the vehicle to READY/Start the engine.
NOTE:
Wait at least 10 seconds after set the vehicle to READY/start the engine.
4. Repeat step 2 to 3 two or more times.
5. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1155” detected?

YES >> GO TO 7.
NO >> Inspection End.

7. CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect brake fluid level switch harness connector.
3. Check the brake fluid level switch harness connector for disconnection or looseness.
4. Check the brake fluid level switch pin terminals for damage or loose connection with harness connector.
5. Disconnect combination meter harness connector.
6. Check the combination meter harness connector for disconnection or looseness.
7. Check the combination meter pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

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

8. PERFORM SELF-DIAGNOSIS (4)

CONSULT
1. Connect brake fluid level switch harness connector.
2. Connect combination meter harness connector.
3. Erase “Self Diagnostic Result” mode of “ABS”.
4. Turn the ignition switch OFF → ON → OFF.
NOTE:
Wait at least 10 seconds after turning ignition switch OFF or ON.
5. Set the vehicle to READY/Start the engine.
NOTE:
Wait at least 10 seconds after set the vehicle to READY/start the engine.
6. Repeat step 4 to 5 two or more times.
7. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1155” detected?

YES >> GO TO 9.
NO >> Inspection End.

9. CHECK BRAKE FLUID LEVEL SWITCH CIRCUIT (1)

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

Brake fluid level switch		Combination meter		Continuity
Connector	Terminal	Connector	Terminal	
E63	1	M76	25	Yes

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

Brake fluid level switch		Ground	Continuity
Connector	Terminal		
E63	1	—	No

Is the inspection result normal?

YES >> GO TO 10.

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

10. CHECK BRAKE FLUID LEVEL SWITCH GROUND CIRCUIT

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

Brake fluid level switch		Ground	Continuity
Connector	Terminal		
E63	2	—	Yes

Is the inspection result normal?

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

11. CHECK COMBINATION METER

1. Connect brake fluid level switch harness connector.
2. Connect combination meter harness connector.
3. Check the combination meter. Refer to MWI-19, "On Board Diagnosis Function".

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".
NO >> Repair or replace combination meter. Refer to MWI-81, "Removal and Installation".

Component Inspection

INFOID:0000000014895620

1. CHECK BRAKE FLUID LEVEL SWITCH

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

Brake fluid level switch	Condition	Continuity
Terminal		
1 – 2	When brake fluid level in reservoir tank is within the specified level.	No
	When brake fluid level in reservoir tank is less than the specified level.	Yes

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace hydraulic brake booster unit. Refer to BR-66, "Inspection After Installation".

C1160 DECEL G SEN SET

DTC Description

INFOID:0000000014895621

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
C1160	DECEL G SEN SET (Decel G sensor set)	When calibration of yaw rate/side/decel G sensor is not complete.

POSSIBLE CAUSE

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

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery	• Incomplete calibration of decel G sensor • ABS actuator and electric unit (control unit)

FAIL-SAFE

The following functions are suspended.
- VDC function
- TCS function
- ABS function (AWD models)
- Brake assist function (AWD models)
- Brake force distribution function
- hill start assist function
- Active trace control function (control of chassis control module)
- Active ride control function (control of chassis control module)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnsotic Result” mode of “ABS”.

Is DTC “C1160” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-138, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: Inspection End (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End

Diagnosis Procedure

INFOID:0000000014895622

1.CALIBRATION OF DECEL G SENSOR

Perform calibration of decel G sensor. Refer to BRC-80, "Description".

>> GO TO 2.

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

With CONSULT

1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1160” detected?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".

NO >> Inspection End.

C1164, C1165 CV SYSTEM

DTC Description

INFOID:0000000014895623

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
C1164	CV 1 (Cut valve 1)	When a malfunction is detected in cut valve 1.
C1165	CV 2 (Cut valve 2)	When a malfunction is detected in cut valve 2.

POSSIBLE CAUSE

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

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery	• Harness or connector • ABS actuator and electric unit (control unit) • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery

FAIL-SAFE

The following functions are suspended.
- VDC function
- TCS function
- ABS function
- EBD function
- Brake assist function
- Brake force distribution function
- hill start assist function
- Active trace control function (control of chassis control module)
- Active ride control function (control of chassis control module)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1164” or “C1165” detected?

YES-1 >> “C1164” or “C1165” is displayed by “CRNT”: Proceed to BRC-140, "Diagnosis Procedure".

YES-2 >> “C1164” and “C1165” are displayed by “PAST”: Inspection End (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000014895624

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.PERFORM SELF-DIAGNOSIS

CONSULT
Select “Self Diagnostic Result” mode of “ABS” again.

Is DTC “C1164” or “C1165” detected?

YES >> GO TO 3.
NO >> Inspection End.

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-169, "Diagnosis Procedure".

Is the inspection result normal?

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

4.CHECK TERMINAL

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

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".
NO >> Repair / replace harness, connector, or terminal.

C1170 VARIANT CODING

DTC Description

INFOID:0000000014895625

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
C1170	VARIANT CODING (Variant coding)	When the information in ABS actuator and electric unit (control unit) is not the same.

POSSIBLE CAUSE

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

PAST DTC	CRNT DTC
—	• ABS actuator and electric unit (control unit) • ABS actuator and electric unit (control unit) is not configured.

FAIL-SAFE

The following functions are suspended.
- VDC function
- TCS function
- ABS function
- EBD function
- Brake assist function
- Brake force distribution function
- hill start assist function
- Active trace control function (control of chassis control module)
- Active ride control function (control of chassis control module)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1170” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-141, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: Inspection End (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000014895626

1.CONFIGURATION OF ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Perform configuration of ABS actuator and electric unit (control unit). Refer to BRC-84, "Work Procedure".

CAUTION:

Never replace the ABS actuator and electric unit (control unit).

>> GO TO 2.

2. CHECK SELF-DIAGNOSIS RESULTS

CONSULT

Replace the ABS actuator and electric unit (control unit) even if other DTC are displayed along with “C1170” in self-diagnosis for “ABS”.

>> Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".

C118C HEV SYSTEM

DTC Description

INFOID:0000000014895627

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
C118C	EV/HEV SYSTEM (Electric vehicle/hybrid electric vehicle system)	When a malfunction is detected in HPCM system.

POSSIBLE CAUSE

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

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery • CAN communication line	• Harness or connector • HPCM • ABS actuator and electric unit (control unit) • CAN communication line

FAIL-SAFE

The following functions are suspended.
• Cooperative regenerative brake function

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C118C” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-143, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: Inspection End (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000014895628

1.CHECK HEV SYSTEM

CONSULT
Select “Self Diagnostic Result” mode of “EV/HEV”. Refer to HBC-43, "CONSULT Function".

Is DTC detected?

YES >> Check the DTC. Refer to HBC-71, "DTC Index".
NO >> GO TO 2.

2.CHECK CONNECTOR AND TERMINAL

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

Is the inspection result normal?

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

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

CONSULT

1. Connect HPCM harness connector.
2. Connect ABS actuator and electric unit (control unit) harness connector.
3. Erase “Self Diagnostic Result” for “ABS”.
4. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
5. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
6. Repeat step 4 to 5 two or more times.
7. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C118C” or “U1000” detected?

YES (“C118C”)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".
YES (“U1000”)>>Refer to LAN-26, "Trouble Diagnosis Flow Chart".
NO >> Inspection End.

C1B63 STROKE SENSOR

DTC Description

INFOID:0000000014895629

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
C1B63	STROKE SENSOR SIGNAL (Stroke sensor signal malfunction)	• When a malfunction is detected in the stroke sensor. • When a normal position of the stoke sensor is not available.

POSSIBLE CAUSE

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

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply circuit • Stroke sensor power supply system • Fuse • Fusible link • 12V battery	• Harness or connector • ABS actuator and electric unit (control unit) power supply circuit • Stroke sensor • Stroke sensor power supply system • Fuse • Fusible link • 12V battery

FAIL-SAFE

The following functions are suspended.
• Cooperative regenerative brake function

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Depress brake pedal by 100 mm (3.94 in) or more, and hold the position for 5 seconds or more.
5. Release brake pedal.
6. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1B63” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-145, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: Inspection End (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000014895630

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.PERFORM SELF-DIAGNOSIS (1)

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Depress brake pedal by 100 mm (3.94 in) or more, and hold the position for 5 seconds or more.
5. Release brake pedal.
6. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1B63” detected?

YES >> GO TO 3.
NO >> Inspection End.

3.VISUALLY CHECK STROKE SENSOR

Check the stroke sensor for damage.

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace error-detected parts and GO TO 7.

4.CHECK STROKE SENSOR INSTALLATION

Check the stroke sensor for looseness and disconnection.

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace error-detected parts and GO TO 7.

5.CHECK BRAKE PEDAL HEIGHT

Check each brake pedal height. Refer to BR-49, "Inspection".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Adjust each height. Refer to BR-49, "Adjustment". GO TO 7.

6.PERFORM SELF-DIAGNOSIS (2)

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Depress brake pedal by 100 mm (3.94 in) or more, and hold the position for 5 seconds or more.
5. Release brake pedal.
6. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1B63” detected?

YES >> GO TO 7.
NO >> Inspection End.

7.CHECK STROKE SENSOR RESISTANCE

1. Disconnect ABS actuator and electric unit (control unit) harness connector.
2. Check the resistance between ABS actuator and electric unit (control unit) connector pin terminals.

ABS actuator and electric unit (control unit)		Condition	Resistance
Connector	Terminal		
E125	8 – 31	Gradually depress the brake pedal.	Resistance value increases between 0.28 – 1.27 kΩ, according to the depth of brake depression.
	10 – 31		Resistance value decreases between 0.28 – 1.27 kΩ, according to the depth of brake depression.

Is the inspection result normal?

YES >> GO TO 10.
NO >> GO TO 8.

8.REPLACE STROKE SENSOR

Replace the stroke sensor. Refer to BRC-209, "Removal and Installation".

>> GO TO 9.

9.STROKE SENSOR CALIBRATION (2)

CONSULT
1. Connect ABS actuator and electric unit (control unit) harness connector.
2. Perform stroke sensor calibration. Refer to BRC-82, "Description".

>> GO TO 10.

10.PERFORM SELF-DIAGNOSIS (3)

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Depress brake pedal by 100 mm (3.94 in) or more, and hold the position for 5 seconds or more.
5. Release brake pedal.
6. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1B63” detected?

YES >> GO TO 11.
NO >> Inspection End.

11.CHECK STROKE SENSOR CIRCUIT (1)

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

Stroke sensor		ABS actuator and electric unit (control unit)		Continuity
Connector	Terminal	Connector	Terminal	
E66	1	E125	31	Yes
			8	No
			33	No
			10	No
	2		31	No
			8	No
			33	No
			10	Yes
	3		31	No
			8	No
			33	Yes
			10	No
	4		31	No
			8	Yes
			33	No
			10	No

Is the inspection result normal?

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

12. CHECK STROKE SENSOR CIRCUIT (2)

1. Turn the ignition switch OFF.
2. Check the continuity between stroke sensor and ground.

Stroke sensor		Ground	Continuity
Connector	Terminal		
E66	2	—	No
	4		

Is the inspection result normal?

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

13. CHECK STROKE SENSOR POWER SUPPLY

1. Connect ABS actuator and electric unit (control unit) harness connector.
2. Turn the ignition switch ON.
   CAUTION:
   Never set the vehicle to READY/Never start the engine.
3. Check the stroke sensor power voltage.

Terminals			Voltage
(+)		(–)	
Stroke sensor		Ground	
Connector	Terminal		
E66	3	—	4.75 – 5.25 V

Is the inspection result normal?

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

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-169, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair / replace harness, connector, fuse, or fusible link.

15. PERFORM SELF-DIAGNOSIS (4)

CONSULT

1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Depress brake pedal by 100 mm (3.94 in) or more, and hold the position for 5 seconds or more.
5. Release brake pedal.
6. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1B63” detected?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".
NO >> Inspection End.

C1B64 STROKE SENSOR

DTC Description

INFOID:0000000014895631

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
C1B64	STROKE SENSOR POWER SUPPLY (Stroke sensor power supply)	When the power supply voltage of the stroke sensor is not normal.

POSSIBLE CAUSE

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

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply circuit • Stroke sensor power supply system • Fuse • Fusible link • 12V battery	• Harness or connector • ABS actuator and electric unit (control unit) power supply circuit • Stroke sensor • Stroke sensor power supply system • Fuse • Fusible link • 12V battery

FAIL-SAFE

The following functions are suspended.
• Cooperative regenerative brake function

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Depress brake pedal by 100 mm (3.94 in) or more, and hold the position for 5 seconds or more.
5. Release brake pedal.
6. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1B64” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-150, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: Inspection End (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000014895632

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.PERFORM SELF-DIAGNOSIS (1)

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Depress brake pedal by 100 mm (3.94 in) or more, and hold the position for 5 seconds or more.
5. Release brake pedal.
6. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1B64” detected?

YES >> GO TO 3.
NO >> Inspection End.

3.VISUALLY CHECK STROKE SENSOR

Check the stroke sensor for damage.

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace error-detected parts and GO TO 7.

4.CHECK STROKE SENSOR INSTALLATION

Check the stroke sensor for looseness and disconnection.

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace error-detected parts and GO TO 7.

5.CHECK BRAKE PEDAL HEIGHT

Check each brake pedal height. Refer to BR-51, "Inspection".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Adjust each height. Refer to BR-49, "Adjustment". GO TO 7.

6.PERFORM SELF-DIAGNOSIS (2)

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Depress brake pedal by 100 mm (3.94 in) or more, and hold the position for 5 seconds or more.
5. Release brake pedal.
6. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1B64” detected?

YES >> GO TO 7.
NO >> Inspection End.

7.CHECK STROKE SENSOR RESISTANCE

1. Disconnect ABS actuator and electric unit (control unit) harness connector.
2. Check the resistance between ABS actuator and electric unit (control unit) connector pin terminals.

ABS actuator and electric unit (control unit)		Condition	Resistance
Connector	Terminal		
E125	8 – 31	Gradually depress the brake pedal.	Resistance value increases between 0.28 – 1.27 kΩ, according to the depth of brake depression.
	10 – 31		Resistance value decreases between 0.28 – 1.27 kΩ, according to the depth of brake depression.

Is the inspection result normal?

YES >> GO TO 10.
NO >> GO TO 8.

8.REPLACE STROKE SENSOR

Replace the stroke sensor. Refer to BRC-209, "Removal and Installation".

>> GO TO 9.

9.STROKE SENSOR CALIBRATION (2)

CONSULT
1. Connect ABS actuator and electric unit (control unit) harness connector.
2. Perform stroke sensor calibration. Refer to BRC-82, "Description".

>> GO TO 10.

10.PERFORM SELF-DIAGNOSIS (3)

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Depress brake pedal by 100 mm (3.94 in) or more, and hold the position for 5 seconds or more.
5. Release brake pedal.
6. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1B64” detected?

YES >> GO TO 11.
NO >> Inspection End.

11.CHECK STROKE SENSOR CIRCUIT (1)

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

Stroke sensor		ABS actuator and electric unit (control unit)		Continuity
Connector	Terminal	Connector	Terminal	
E66	1	E125	31	Yes
			8	No
			33	No
			10	No
	2		31	No
			8	No
			33	No
			10	Yes
	3		31	No
			8	No
			33	Yes
			10	No
	4		31	No
			8	Yes
			33	No
			10	No

Is the inspection result normal?

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

12. CHECK STROKE SENSOR CIRCUIT (2)

1. Turn the ignition switch OFF.
2. Check the continuity between stroke sensor and ground.

Stroke sensor		Ground	Continuity
Connector	Terminal		
E66	2	—	No
	4		

Is the inspection result normal?

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

13. CHECK STROKE SENSOR POWER SUPPLY

1. Connect ABS actuator and electric unit (control unit) harness connector.
2. Turn the ignition switch ON.
   CAUTION:
   Never set the vehicle to READY/Never start the engine.
3. Check the stroke sensor power voltage.

Terminals			Voltage
(+)		(–)	
Stroke sensor		Ground	
Connector	Terminal		
E66	3	—	4.75 – 5.25 V

Is the inspection result normal?

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

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-169, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair / replace harness, connector, fuse, or fusible link.

15. PERFORM SELF-DIAGNOSIS (4)

CONSULT

1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Depress brake pedal by 100 mm (3.94 in) or more, and hold the position for 5 seconds or more.
5. Release brake pedal.
6. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1B64” detected?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".
NO >> Inspection End.

C1B65 INCOMPLETE STROKE SENSOR LEARNING

DTC Description

INFOID:0000000014895633

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
C1B65	STROKE SEN CALIB INCOMPLETE (Stroke sensor calibration incomplete)	When a learning of the stroke sensor is not completed.

POSSIBLE CAUSE

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

PAST DTC	CRNT DTC
Stroke sensor calibration not performed	Stroke sensor calibration not performed

FAIL-SAFE

The following functions are suspended.
- Cooperative regenerative brake function

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Depress brake pedal by 100 mm (3.94 in) or more, and hold the position for 5 seconds or more.
5. Release brake pedal.
6. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1B65” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-155, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: Inspection End (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000014895634

1.STROKE SENSOR CALIBRATION

Perform stroke sensor calibration. Refer to BRC-82, "Description".

>> GO TO 2.

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

CONSULT

1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1B65” detected?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".

NO >> Inspection End.

C1B66 STROKE SENSOR

DTC Description

INFOID:0000000014895635

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
C1B66	STROKE SENSOR INVALID (Stroke sensor invalid)	When a malfunction is detected in the stroke sensor during a braking.

POSSIBLE CAUSE

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

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply circuit • Stroke sensor power supply system • Fuse • Fusible link • 12V battery	• Harness or connector • ABS actuator and electric unit (control unit) power supply circuit • Stroke sensor • Stroke sensor power supply system • Fuse • Fusible link • 12V battery

FAIL-SAFE

The following functions are suspended.
• Cooperative regenerative brake function

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Depress brake pedal by 100 mm (3.94 in) or more, and hold the position for 5 seconds or more.
5. Release brake pedal.
6. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1B66” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-157, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: Inspection End (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000014895636

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.

2. Check the stroke sensor harness connector for disconnection or looseness.
3. Check the ABS actuator and electric unit (control unit) harness connector for disconnection or looseness.

Is the inspection result normal?

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

2.PERFORM SELF-DIAGNOSIS (1)

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Depress brake pedal by 100 mm (3.94 in) or more, and hold the position for 5 seconds or more.
5. Release brake pedal.
6. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1B66” detected?

YES >> GO TO 3.
NO >> Inspection End.

3.VISUALLY CHECK STROKE SENSOR

Check the stroke sensor for damage.

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace error-detected parts and GO TO 7.

4.CHECK STROKE SENSOR INSTALLATION

Check the stroke sensor for looseness and disconnection.

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace error-detected parts and GO TO 7.

5.CHECK BRAKE PEDAL HEIGHT

Check each brake pedal height. Refer to BR-49, "Inspection".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Adjust each height. Refer to BR-49, "Adjustment". GO TO 7.

6.PERFORM SELF-DIAGNOSIS (2)

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Depress brake pedal by 100 mm (3.94 in) or more, and hold the position for 5 seconds or more.
5. Release brake pedal.
6. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1B66” detected?

YES >> GO TO 7.
NO >> Inspection End.

7.CHECK STROKE SENSOR RESISTANCE

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

2. Check the resistance between ABS actuator and electric unit (control unit) connector pin terminals.

ABS actuator and electric unit (control unit)		Condition	Resistance
Connector	Terminal		
E125	8 – 31	Gradually depress the brake pedal.	Resistance value increases between 0.28 – 1.27 kΩ, according to the depth of brake depression.
	10 – 31		Resistance value decreases between 0.28 – 1.27 kΩ, according to the depth of brake depression.

Is the inspection result normal?

YES >> GO TO 10.
NO >> GO TO 8.

8. REPLACE STROKE SENSOR

Replace the stroke sensor. Refer to BRC-15, "Stroke Sensor".

>> GO TO 9.

9. STROKE SENSOR CALIBRATION (2)

CONSULT
1. Connect ABS actuator and electric unit (control unit) harness connector.
2. Perform stroke sensor calibration. Refer to BRC-82, "Description".

>> GO TO 10.

10. PERFORM SELF-DIAGNOSIS (3)

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Depress brake pedal by 100 mm (3.94 in) or more, and hold the position for 5 seconds or more.
5. Release brake pedal.
6. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1B66” detected?

YES >> GO TO 11.
NO >> Inspection End.

11. CHECK STROKE SENSOR CIRCUIT (1)

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

Stroke sensor		ABS actuator and electric unit (control unit)		Continuity
Connector	Terminal	Connector	Terminal	
E66	1	E125	31	Yes
			8	No
			33	No
			10	No
	2		31	No
			8	No
			33	No
			10	Yes
	3		31	No
			8	No
			33	Yes
			10	No
	4		31	No
			8	Yes
			33	No
			10	No

Is the inspection result normal?

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

12. CHECK STROKE SENSOR CIRCUIT (2)

1. Turn the ignition switch OFF.
2. Check the continuity between stroke sensor and ground.

Stroke sensor		Ground	Continuity
Connector	Terminal		
E66	2	—	No
	4		

Is the inspection result normal?

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

13. CHECK STROKE SENSOR POWER SUPPLY

1. Connect ABS actuator and electric unit (control unit) harness connector.
2. Turn the ignition switch ON.
   CAUTION:
   Never set the vehicle to READY/Never start the engine.
3. Check the stroke sensor power voltage.

Terminals			Voltage
(+)		(–)	
Stroke sensor		Ground	
Connector	Terminal		
E66	3	—	4.75 – 5.25 V

Is the inspection result normal?

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

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-169, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair / replace harness, connector, fuse, or fusible link.

15. PERFORM SELF-DIAGNOSIS (4)

CONSULT

1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Depress brake pedal by 100 mm (3.94 in) or more, and hold the position for 5 seconds or more.
5. Release brake pedal.
6. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1B66” detected?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".
NO >> Inspection End.

C1B68 MOTOR POWER SUPPLY

DTC Description

INFOID:0000000014895637

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
C1B68	MOTOR VOLTAGE (Motor voltage)	When a malfunction is detected in motor power supply.

POSSIBLE CAUSE

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

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery	• Harness or connector • ABS actuator and electric unit (control unit) • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • 12V battery

FAIL-SAFE

The following functions are suspended.
- VDC function
- TCS function
- ABS function
- Brake assist function
- hill start assist function
- Brake force distribution function
- Active trace control function (control of chassis control module)
- Active ride control function (control of chassis control module)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Turn the ignition switch OFF → ON, and wait 30 seconds.
2. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
3. Stop the vehicle.
4. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
5. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
6. Repeat step 4 to 5 two or more times.
7. Select “Select Diagnostic Result” mode of “ABS”.

Is DTC “C1111” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-163, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: Inspection End (Erase the memory of self-diagnosis results.)

NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000014895638

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.PERFORM SELF-DIAGNOSIS

CONSULT
1. Turn the ignition switch OFF → ON, and wait 30 seconds.
2. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
   NOTE:
   Vehicle must be driven after repair or replacement to erase the previous DTCs.
3. Stop the vehicle.
4. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
5. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
6. Repeat step 4 to 5 two or more times.
7. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “C1111” detected?

YES >> GO TO 3.
NO >> Inspection End.

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-169, "Diagnosis Procedure".

Is the inspection result normal?

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

4.ERASE SELF-DIAGNOSIS RESULT (1)

CONSULT
1. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
   NOTE:
   Vehicle must be driven after repair or replacement to erase the previous DTCs.
2. Stop the vehicle.
3. Erase “Self Diagnostic Result” for “ABS”.
4. Turn the ignition switch OFF → ON → OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF or ON.

>> Inspection End.

5.CHECK TERMINAL

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

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".

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

6. ERASE SELF-DIAGNOSIS RESULT (2)

Ⓔ CONSULT

1. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
   NOTE:
   Vehicle must be driven after repair or replacement to erase the previous DTCs.
2. Stop the vehicle.
3. Erase “Self Diagnostic Result” for “ABS”.
4. Turn the ignition switch OFF → ON → OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF or ON.

>> Inspection End.

U1000 CAN COMM CIRCUIT

DTC Description

INFOID:0000000014895639

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
U1000	CAN COMM CIRCUIT (CAN communication circuit)	When CAN communication signal is not continuously transmitted or received for 2 seconds or more.

POSSIBLE CAUSE

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

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

FAIL-SAFE

The following functions are suspended.
- VDC function
- TCS function
- ABS function (When a malfunction detected in CAN communication [between ABS actuator and electric unit (control unit) and chassis control module])
- EBD function (When a malfunction detected in CAN communication [between ABS actuator and electric unit (control unit) and chassis control module])
- Brake assist function
- Brake force distribution function
- hill start assist function
- Active trace control function (control of chassis control module)
- Active ride control function (control of chassis control module)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnostic Result” mode of “ABS”.

Is DTC “U1000” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-166, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: Inspection End (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000014895640

Proceed to LAN-26, "Trouble Diagnosis Flow Chart".

U1010 CONTROL UNIT (CAN)

DTC Description

INFOID:0000000014895641

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
U1010	CONTROL UNIT (CAN) (Control unit [CAN communication])	When detecting error during the initial diagnosis of CAN controller of ABS actuator and electric unit (control unit).

POSSIBLE CAUSE

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

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

FAIL-SAFE

The following functions are suspended.
- VDC function
- TCS function
- ABS function (When a malfunction detected in CAN communication [between ABS actuator and electric unit (control unit) and chassis control module])
- EBD function (When a malfunction detected in CAN communication [between ABS actuator and electric unit (control unit) and chassis control module])
- Brake assist function
- Brake force distribution function
- hill start assist function
- Active trace control function (control of chassis control module)
- Active ride control function (control of chassis control module)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

CONSULT
1. Turn the ignition switch OFF.
   NOTE:
   Wait at least 10 seconds after turning ignition switch OFF.
2. Set the vehicle to READY/Start the engine.
   NOTE:
   Wait at least 10 seconds after set the vehicle to READY/start the engine.
3. Repeat step 1 to 2 two or more times.
4. Select “Self Diagnsotic Result” mode of “ABS”.

Is DTC “U1010” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-168, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: Inspection End (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000014895642

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

Check ABS actuator and electric unit (control unit) harness connector for disconnection and deformation.

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".

NO >> Repair or replace error-detected parts.

POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:0000000014895643

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

1. Turn the ignition switch OFF with driver door open.
2. Get out of the vehicle and close driver's door.
3. Wait for 3 minutes or more.
   CAUTION:
   Never operate vehicle (door lock, open/close the door, etc,) while waiting. It causes an accessory power supply by auto ACC function.
4. Disconnect ABS actuator and electric unit (control unit) harness connector.
5. Check the voltage between ABS actuator and electric unit (control unit) harness connector and ground.

Terminals			Voltage (Approx.)
(+)		(–)	
ABS actuator and electric unit (control unit)		Ground	
Connector	Terminal		
E125	28	—	0 V

6. Turn the ignition switch ON
   NOTE:
   Set the vehicle to READY/Start the engine.
7. Check the voltage between ABS actuator and electric unit (control unit) harness connector and ground.

Terminals			Voltage (Approx.)
(+)		(–)	
ABS actuator and electric unit (control unit)		Ground	
Connector	Terminal		
E125	28	—	10 – 16 V

Is the inspection result normal?

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

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

1. Turn the ignition switch OFF with driver door open.
2. Get out of the vehicle and close driver's door.
3. Wait for 3 minutes or more.
   CAUTION:
   Never operate vehicle (door lock, open/close the door, etc,) while waiting. It causes an accessory power supply by auto ACC function.
4. Check the 10A fuse (#21).
5. Disconnect fuse block (J/B) harness connector.
6. Check the continuity between ABS actuator and electric unit (control unit) harness connector and fuse block (J/B) harness connector.

ABS actuator and electric unit (control unit)		Fuse block (J/B)		Continuity
Connector	Terminal	Connector	Terminal	
E125	28	M2	6R	Yes

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

ABS actuator and electric unit (control unit)		Ground	Continuity
Connector	Terminal		
E125	28	—	No

Is the inspection result normal?

YES >> Perform trouble diagnosis for accessory power supply. Refer to PG-37, "Wiring Diagram - ACCESSORY POWER SUPPLY -"
NO >> Repair / replace harness, connector, or fuse.

3. CHECK MOTOR AND MOTOR RELAY POWER SUPPLY

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

Terminals			Voltage (Approx.)
(+)		(–)	
ABS actuator and electric unit (control unit)		Ground	
Connector	Terminal		
E125	3	—	Battery voltage

Is the inspection result normal?

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

4. CHECK MOTOR AND MOTOR RELAY POWER SUPPLY CIRCUIT

1. Turn the ignition switch OFF.
2. Check the 50A fusible link (#L).
3. Check the continuity and short circuit between ABS actuator and electric unit (control unit) harness connector terminal (3) and 50A fusible link (#L).

Is the inspection result normal?

YES >> Perform trouble diagnosis for 12V battery power supply. Refer to PG-13, "Wiring Diagram - BATTERY POWER SUPPLY -"
NO >> Repair / replace harness, connector, or fusible link.

5. CHECK ACTUATOR RELAY, ABS IN VALVE, ABS OUT VALVE POWER SUPPLY

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

Terminals			Voltage (Approx.)
(+)		(–)	
ABS actuator and electric unit (control unit)		Ground	
Connector	Terminal		
E125	1	—	Battery voltage

Is the inspection result normal?

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

6. CHECK ACTUATOR RELAY, ABS IN VALVE, ABS OUT VALVE POWER SUPPLY CIRCUIT

1. Turn the ignition switch OFF.
2. Check the 30A fusible link (J).
3. Check the continuity and short circuit between ABS actuator and electric unit (control unit) harness connector terminal (1) and 30A fusible link (J).

Is the inspection result normal?

YES >> Perform trouble diagnosis for 12V battery power supply. Refer to PG-13, "Wiring Diagram - BATTERY POWER SUPPLY -"

NO >> Repair / replace harness, connector, or fusible link.

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

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

ABS actuator and electric unit (control unit)		—	Continuity
Connector	Terminal		
E125	2	Ground	Yes
	4		

Is the inspection result normal?

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

8. CHECK TERMINAL

1. Check the ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.
2. Check the fuse block (J/B) pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".
NO >> Repair / replace harness, connector, or terminal.

PARKING BRAKE SWITCH

Component Function Check

INFOID:0000000014895644

1.CHECK PARKING BRAKE SWITCH OPERATION

Operate the parking brake lever. Then check that the brake warning lamp in the combination meter turns ON/OFF correctly.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Proceed to BRC-172, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000014895645

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 continuity between parking brake switch harness connector and combination meter harness connector.

Parking brake switch		Combination meter		Continuity
Connector	Terminal	Connector	Terminal	
E52	1	M76	26	Yes

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

Parking brake switch		Ground	Continuity
Connector	Terminal		
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 BRC-172, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace parking brake switch. Refer to PB-10, "Removal and Installation".

3.CHECK COMBINATION METER

CONSULT

1. Connect parking brake switch harness connector.
2. Connect combination meter harness connector.
3. Turn the ignition switch ON.
   CAUTION:
   Never set the vehicle to READY/start the engine.
4. Select “Self Diagnostic Result” mode of “METER/M&A”.

Is any DTC detected?

YES >> Check the DTC. Refer to MWI-32, "DTC Index".
NO >> Check each pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace error-detected parts.

Component Inspection

INFOID:0000000014895646

1.CHECK PARKING BRAKE SWITCH

1. Turn the ignition switch OFF.
2. Disconnect parking brake switch harness connector.
3. Remove parking brake switch. Refer to PB-10, "Removal and Installation".
4. Check continuity between parking brake switch connector terminal.

Parking brake switch Terminal	Ground	Condition	Continuity
1	—	When the parking brake switch is operated.	Yes
		When the parking brake switch is not operated.	No

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace parking brake switch. Refer to PB-10, "Removal and Installation".

VDC OFF SWITCH

Component Function Check

INFOID:0000000014895647

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 diagnosis procedure. Refer to BRC-174, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000014895648

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 continuity between ABS actuator and electric unit (control unit) harness connector and VDC OFF switch harness connector.

ABS actuator and electric unit (control unit)		VDC OFF switch		Continuity
Connector	Terminal	Connector	Terminal	
E125	6	M79	1	Yes

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

ABS actuator and electric unit (control unit)		Ground	Continuity
Connector	Terminal		
E125	6	—	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 continuity between VDC OFF switch harness connector and ground.

VDC OFF switch		Ground	Continuity
Connector	Terminal		
M79	8	—	Yes

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace error-detected parts.

3.CHECK VDC OFF SWITCH

Check VDC OFF switch. Refer to BRC-175, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace VDC OFF switch. Refer to BRC-206, "Removal and Installation".

4.CHECK VDC OFF SWITCH SIGNAL

CONSULT

1. Connect ABS actuator and electric unit (control unit) harness connector.
2. Connect VDC OFF switch harness connector.
3. Select “ABS”, “DATA MONITOR” and “OFF SW” according to this order. Check VDC OFF switch signal.

Condition	DATA MONITOR
When VDC OFF switch is pressed and VDC OFF indicator lamp in combination meter is in ON status	On
When VDC OFF switch is pressed and VDC OFF indicator lamp in combination meter is in OFF status	Off

Is the inspection result normal?

YES >> Inspection End.
NO >> GO TO 5.

5. CHECK TERMINAL

- Check ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.
- Check VDC OFF switch 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 BRC-204, "Removal and Installation".
NO >> Repair or replace error-detected parts.

Component Inspection

INFOID:0000000014895649

1. CHECK VDC OFF SWITCH

1. Turn the ignition switch OFF.
2. Disconnect triple switch harness connector.
3. Check continuity between terminals of VDC OFF switch connector.

VDC OFF switch Terminal	Condition	Continuity
6 – 8	When VDC OFF switch is pressed	Yes
	When VDC OFF switch is not pressed	No

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace VDC OFF switch. Refer to BRC-206, "Removal and Installation".

ABS WARNING LAMP

Component Function Check

INFOID:0000000014895653

1.CHECK ABS WARNING LAMP FUNCTION

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

CAUTION:

Never set the vehicle to READY/start the engine.

Is the inspection result normal?

YES >> Inspection End.
NO >> Proceed to BRC-176, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000014895654

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 BRC-169, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace error-detected parts.

2.PERFORM SELF-DIAGNOSIS

CONSULT

Select “Self Diagnostic Result” mode of “ABS”.

Is any DTC detected?

YES >> Check the DTC. Refer to BRC-61, "DTC Index".
NO >> GO TO 3.

3.CHECK ABS WARNING LAMP SIGNAL

CONSULT

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

   CAUTION:

   Never set the vehicle to READY/start the engine.

Is the inspection result normal?

YES >> Check combination meter. Refer to BRC-49, "CONSULT Function".
NO >> Replace ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".

BRAKE WARNING LAMP

Component Function Check

INFOID:0000000014895655

1.CHECK BRAKE WARNING LAMP (RED) FUNCTION (1)

Check that the brake warning lamp (red) turns ON when ignition switch turns ON. Then, brake warning lamp (red) turns OFF after the vehicle is set to READY or the engine is started.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Proceed to BRC-177, "Diagnosis Procedure".

2.CHECK BRAKE WARNING LAMP (RED) FUNCTION (2)

Check that brake warning lamp (red) in combination meter 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).

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check parking brake switch circuit. Refer to BRC-172, "Diagnosis Procedure".

3.CHECK BRAKE WARNING LAMP (RED) FUNCTION (3)

Check that brake warning lamp (red) in combination meter turns ON/OFF when brake fluid level switch is operated while brake fluid level in reservoir tank is with the specified level.

NOTE:
Brake warning lamp turns ON when brake fluid is less than the specified level (when brake fluid level switch is ON).

Is the inspection result normal?

YES >> Inspection End.
NO >> Check brake fluid level switch circuit. Refer to BRC-134, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000014895656

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 BRC-169, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace error-detected parts.

2.CHECK HYDRAULIC BRAKE BOOSTER UNIT POWER SUPPLY AND GROUND CIRCUIT

Perform the trouble diagnosis for hydraulic brake booster unit power supply and ground circuit. Refer to BR-39, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace error-detected parts.

3.PERFORM THE SELF-DIAGNOSIS

CONSULT

1. Turn the ignition switch OFF to ON.
   CAUTION:
   - **Be sure to wait for 10 seconds or more after turning the ignition switch OFF or ON.**
   - **Never set the vehicle to READY/Never start the engine.**
2. Repeat step 1 two times or more.
3. Select “Self Diagnostic Result” mode of “ABS” and “BRAKE”.

Is any DTC detected?

YES >> Check the DTC.
- “ABS”: Refer to BRC-61, "DTC Index".

- “BRAKE”: Refer to BR-19, "DTC Index".

NO >> GO TO 4.

4. CHECK BRAKE WARNING LAMP SIGNAL [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)]

CONSULT

1. Select “ABS”, “Data Monitor” and “EBD WARN LAMP” according to this order.
2. Turn the ignition switch OFF.
3. Check that data monitor displays “On” for several seconds after ignition switch is turned ON and then changes to “Off”.

CAUTION:
Never set the vehicle to READY/Never start the engine.

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".

5. CHECK BRAKE WARNING LAMP SIGNAL (HYDRAULIC BRAKE BOOSTER UNIT)

CONSULT

1. Select “BRAKE”, “Data Monitor” and “BRAKE WARNING LAMP” according to this order.
2. Turn the ignition switch OFF.
3. Check that data monitor displays “On” for several seconds after ignition switch is turned ON and then changes to “Off”.

CAUTION:
Never set the vehicle to READY/Never start the engine.

Is the inspection result normal?

YES >> Replace combination meter. Refer to MWI-81, "Removal and Installation".
NO >> Replace hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".

BRAKE SYSTEM WARNING LAMP

Component Function Check

INFOID:0000000014895657

1.CHECK BRAKE SYSTEM WARNING LAMP (YELLOW) FUNCTION

Check that ABS warning lamp in combination meter turns ON for several seconds after ignition switch is turned ON.

CAUTION:

Never set the vehicle to READY/Never start the engine.

Is the inspection result normal?

YES >> Inspection End.

NO >> Proceed to BRC-179, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000014895658

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 BRC-169, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

2.CHECK HYDRAULIC BRAKE BOOSTER UNIT POWER SUPPLY AND GROUND CIRCUIT

Perform the trouble diagnosis for hydraulic brake booster unit power supply and ground circuit. Refer to BR-39, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

3.PERFORM THE SELF-DIAGNOSIS

CONSULT

1. Turn the ignition switch OFF to ON.

   CAUTION:

   - **Be sure to wait for 10 seconds or more after turning the ignition switch OFF or ON.**
   - **Never set the vehicle to READY/Never start the engine.**

2. Repeat step 1 two times or more.
3. Select “Self Diagnostic Result” mode of “ABS” and “BRAKE”.

Is any DTC detected?

YES >> Check the DTC.

- “ABS”: Refer to BRC-61, "DTC Index".
- “BRAKE”: Refer to BR-19, "DTC Index".

NO >> GO TO 4.

4.CHECK BRAKE WARNING LAMP SIGNAL (HYDRAULIC BRAKE BOOSTER UNIT)

CONSULT

1. Select “BRAKE”, “DATA MONITOR” and “BRAKE SYSTEM WARN LAMP” according to this order.
2. Turn the ignition switch OFF.
3. Check that data monitor displays “On” for several seconds after ignition switch is turned ON and then changes to “Off”.

   CAUTION:

   Never set the vehicle to READY/Never start the engine.

Is the inspection result normal?

YES >> Replace combination meter. Refer to MWI-81, "Removal and Installation".

NO >> Replace hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".

VDC WARNING LAMP

Component Function Check

INFOID:0000000014895659

1.CHECK VDC WARNING LAMP FUNCTION

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

CAUTION:

Never set the vehicle to READY/Never start the engine.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Proceed to BRC-180, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000014895660

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 BRC-169, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace error-detected parts.

2.PERFORM THE SELF-DIAGNOSIS

CONSULT

Select “Self Diagnostic Result” mode of “ABS”.

Is any DTC detected?

YES >> Check the DTC. Refer to BRC-61, "DTC Index".
NO >> GO TO 3.

3.CHECK VDC WARNING LAMP SIGNAL

CONSULT

1. Select “ABS”, “Data Montior” and “SLIP/VDC LAMP” according to this order.
2. Turn the ignition switch OFF.
3. Check that data monitor displays “On” for approx. 1 second after ignition switch is turned ON and then changes to “Off”.

   CAUTION:

   Never set the vehicle to READY/Never start the engine.

Is the inspection result normal?

YES >> Replace combination meter. Refer to MWI-81, "Removal and Installation".
NO >> Replace ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".

VDC OFF INDICATOR LAMP

Component Function Check

INFOID:0000000014895661

1.CHECK VDC OFF INDICATOR LAMP FUNCTION (1)

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

CAUTION:

Never set the vehicle to READY/Never start the engine.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Proceed to BRC-181, "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.

Is the inspection result normal?

YES >> Inspection End
NO >> Check VDC OFF switch system. Refer to BRC-174, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000014895662

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 BRC-169, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace error-detected parts.

2.PERFORM THE SELF-DIAGNOSIS

CONSULT

Select “Self Diagnostic Result” mode of “ABS”.

Is any DTC detected?

YES >> Check the DTC. Refer to BRC-61, "DTC Index".
NO >> GO TO 3.

3.CHECK VDC OFF INDICATOR LAMP SIGNAL (1)

CONSULT

1. Turn the ignition switch ON.
   CAUTION:
   Never set the vehicle to READY/Never start the engine.
2. Select “ABS”, “Data Monitor” and “OFF LAMP” according to this order.
3. Check that data monitor displays “On” for approx. 1 second after ignition switch is turned ON, and then changes to “Off”.

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".

4.CHECK VDC OFF INDICATOR LAMP SIGNAL (2)

CONSULT

Check that data monitor displays “On” or “Off” each time when VDC OFF switch is operated.

Is the inspection result normal?

YES >> Replace the combination meter. Refer to MWI-81, "Removal and Installation".
NO >> Check the VDC OFF switch system. Refer to BRC-174, "Diagnosis Procedure".

SYMPTOM DIAGNOSIS

EXCESSIVE OPERATION FREQUENCY

Description

INFOID:0000000014895665

VDC function, TCS function, ABS function, EBD function, brake assist function, brake force distribution function or hill start assist function operates in excessive operation frequency.

Diagnosis Procedure

INFOID:0000000014895666

1.CHECK BRAKING FORCE

Check brake force using a brake tester.

Is the inspection result normal?

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

2.CHECK FRONT AXLE AND REAR AXLE

Check that there is no excessive looseness in front and rear axle.

- Front axle
  - 2WD models: Refer to FAX-7, "Inspection".
  - AWD models: Refer to FAX-44, "Inspection".
- Rear axle
  - 2WD models: Refer to RAX-6, "Inspection".
  - AWD models: Refer to RAX-14, "Inspection".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace error-detected parts.

3.CHECK WHEEL SENSOR

Check the 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 or replace the wheel sensor.
- Front wheel sensor: Refer to BRC-200, "FRONT WHEEL SENSOR : Removal and Installation".
- Rear sensor rotor: Refer to BRC-202, "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 or replace the sensor rotor.
- Front sensor rotor: Refer to BRC-203, "FRONT SENSOR ROTOR : Removal and Installation - Front Sensor Rotor".
- Rear sensor rotor: Refer to BRC-203, "REAR SENSOR ROTOR : Removal and Installation - Rear Sensor Rotor".

5.CHECK WARNING LAMP TURN OFF

- Check that VDC warning lamp and ABS warning lamp turn OFF approx. 1 second after ignition switch is turned ON.
- Check that brake warning lamp (red) turn OFF after engine started/set the vehicle to READY or driving.

CAUTION:

Brake warning lamp (red) turns ON when parking brake is operated (parking brake switch is ON) (without electric parking brake system) or brake fluid is less than the specified level (brake fluid level switch is ON).

Is the inspection result normal?

YES >> Normal
NO >> Select “Self Diagnostic Result” mode of “ABS” with CONSULT.

UNEXPECTED BRAKE PEDAL REACTION

Description

INFOID:0000000014895667

A malfunction of brake pedal feel (height or others) is detected when brake pedal is depressed.

Diagnosis Procedure

INFOID:0000000014895668

1.CHECK FRONT AXLE AND REAR AXLE

Check that there is no excessive looseness in front and rear axle.
- Front axle
- 2WD models: Refer to FAX-7, "Inspection".
- AWD models: Refer to FAX-44, "Inspection".
- Rear axle
- 2WD models: Refer to RAX-6, "Inspection".
- AWD models: Refer to RAX-14, "Inspection".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace error-detected parts.

2.CHECK TIRE

Check each tire. Refer to WT-74, "Tire Air Pressure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace error-detected parts.

3.CHECK DISC ROTOR

Check the disc rotor.
- Front: Refer to BR-53, "DISC BRAKE ROTOR : Inspection and Adjustment".
- Rear: Refer to BR-55, "DISC BRAKE ROTOR : Inspection and Adjustment".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Refinish or replace the disc rotor.

4.CHECK BRAKE PAD

Check the brake pad.
- Front: Refer to BR-53, "BRAKE PAD : Inspection and Adjustment".
- Rear: Refer to BR-55, "BRAKE PAD : Inspection and Adjustment".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace brake pad.
- Front: Refer to BR-69, "BRAKE PAD : Removal and Installation".
- Rear: Refer to BR-75, "BRAKE PAD : Removal and Installation".

5.CHECK BRAKE CALIPER

Check the brake caliper assembly.
- Front: Refer to BR-71, "BRAKE CALIPER ASSEMBLY : Exploded View".
- Rear: Refer to BR-77, "BRAKE CALIPER ASSEMBLY : Exploded View".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Replace brake caliper assembly.
- Front: Refer to BR-71, "BRAKE CALIPER ASSEMBLY : Removal and Installation".
- Rear: Refer to BR-77, "BRAKE CALIPER ASSEMBLY : Removal and Installation".

6.CHECK BRAKE PIPING

Check brake piping.
- Front: Refer to BR-60, "FRONT : Hydraulic Piping".
- Rear: Refer to BR-62, "REAR : Hydraulic Piping".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Retighten or replace brake piping.
- Front: BR-60, "FRONT : Removal and Installation".
- Rear: BR-63, "REAR : Removal and Installation".

7. CHECK HYDRAULIC BRAKE BOOSTER UNIT

Check brake booster unit. Refer to BR-25, "Inspection".

Is the inspection result normal?

YES >> GO TO 8.
NO >> Replace hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".

8. CHECK BRAKE FLUID LEAKAGE

Check the brake fluid leakage. Refer to BR-51, "Inspection".

Is the inspection result normal?

YES >> GO TO 9.
NO >> Retighten or replace error-detected parts.

9. CHECK BRAKE PEDAL

Check the brake pedal items. Refer to BR-49, "Inspection".

Is the inspection result normal?

YES >> GO TO 10.
NO >> Adjust the brake pedal items. Refer to BR-49, "Adjustment".

10. CHECK BRAKING FORCE

Check the braking force.

Is the inspection result normal?

YES >> GO TO 11.
NO >> Check each component of brake system.

11. CHECK SPEEDOMETER

Check the speedometer. Refer to MWI-19, "On Board Diagnosis Function".

Is the inspection result normal?

YES >> GO TO 12.
NO >> Replace combination meter. Refer to MWI-81, "Removal and Installation".

12. PERFORM SELF-DIAGNOSIS [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)]

CONSULT
Select “Self Diagnostic Result” mode of “ABS”.

Is DTC detected?

YES >> Check the DTC. Refer to BRC-61, "DTC Index".
NO >> GO TO 13.

13. CHECK WHEEL SENSOR

Check each 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 14.
NO >> Repair or replace wheel sensor.
- Front wheel sensor: Refer to BRC-200, "FRONT WHEEL SENSOR : Removal and Installation".
- Rear wheel sensor: Refer to BRC-202, "REAR WHEEL SENSOR : Removal and Installation".

14. CHECK BRAKE PERFORMANCE

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

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair or replace error-detected parts

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

Perform diagnosis of ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-100, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 16.
NO >> Repair or replace error-detected parts.

16. CHECK DATA MONITOR (1)

CONSULT
1. Start the CONSULT and select “ABS” and “Data Monitor” according order.
2. Check the “BRK PEDAL STROKE SEN 1” and “BRK PEDAL STROKE SEN 2”. Refer to BR-18, "Reference Value".

Is the inspection result normal?

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

17. CHECK DATA MONITOR (2)

CONSULT
Check the “ACCEL POS SIG”. Refer to HBC-58, "Reference Value".

Is the inspection result normal?

YES >> GO TO 19.
NO >> Select “Self Diagnostic Result” mode of “EV/HEV”. Refer to HBC-43, "CONSULT Function".

18. PERFORM SELF-DIAGNOSIS (HYDRAULIC BRAKE BOOSTER UNIT)

CONSULT
1. Record or print self-diagnosis result and freeze frame data (FFD).
2. Erase “Self Diagnostic Result” of “BRAKE”.
3. Turn the ignition switch OFF to ON.
   CAUTION:
   - **Be sure to wait for 10 seconds or more after turning the ignition switch OFF or ON.**
   - **Never set the vehicle to READY/Never start the engine.**
4. Repeat step 3 two times or more.
5. Select “Self Diagnostic Result” mode of “BRAKE”.

Is DTC detected?

YES >> Check the DTC. Refer to BR-19, "DTC Index", and GO TO 19.
NO >> Inspection End.

19. AIR BLEEDING

1. Perform air bleeding. Refer to BR-52, "Bleeding Brake System".
2. Check the brake pedal feel (height or others).

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace the hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".

THE BRAKING DISTANCE IS LONG

Description

INFOID:0000000014895669

- Brake stopping distance is long when ABS function is operated.
- Brake stopping distance is long when hydraulic brake actuation system is malfunctioning.

Diagnosis Procedure

INFOID:0000000014895670

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

1.CHECK FRONT AXLE AND REAR AXLE

Check that there is no excessive looseness in front and rear axle.
- Front axle
- 2WD models: Refer to FAX-7, "Inspection".
- 4WD models: Refer to FAX-44, "Inspection".
- Rear axle
- 2WD models: Refer to RAX-6, "Inspection".
- 4WD models: Refer to RAX-14, "Inspection".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace error-detected parts.

2.CHECK TIRE

Check each tire. Refer to WT-74, "Tire Air Pressure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace error-detected parts.

3.CHECK DISC ROTOR

Check the disc rotor.
- Front: Refer to BR-53, "DISC BRAKE ROTOR : Inspection and Adjustment".
- Rear: Refer to BR-55, "DISC BRAKE ROTOR : Inspection and Adjustment".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Refinish or replace the disc rotor.

4.CHECK BRAKE PAD

Check the brake pad.
- Front: Refer to BR-53, "BRAKE PAD : Inspection and Adjustment".
- Rear: Refer to BR-55, "BRAKE PAD : Inspection and Adjustment".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace brake pad.
- Front: Refer to BR-69, "BRAKE PAD : Removal and Installation".
- Rear: Refer to BR-75, "BRAKE PAD : Removal and Installation".

5.CHECK BRAKE CALIPER

Check the brake caliper assembly.
- Front: Refer to BR-71, "BRAKE CALIPER ASSEMBLY : Exploded View".
- Rear: Refer to BR-77, "BRAKE CALIPER ASSEMBLY : Exploded View".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Replace brake caliper assembly.
- Front: Refer to BR-71, "BRAKE CALIPER ASSEMBLY : Removal and Installation".
- Rear: Refer to BR-77, "BRAKE CALIPER ASSEMBLY : Removal and Installation".

6.CHECK BRAKE PIPING

Check brake piping.
- Front: Refer to BR-60, "FRONT : Hydraulic Piping".
- Rear: Refer to BR-62, "REAR : Hydraulic Piping".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Retighten or replace brake piping.
- Front: BR-60, "FRONT : Removal and Installation".
- Rear: BR-63, "REAR : Removal and Installation".

7.CHECK HYDRAULIC BRAKE BOOSTER UNIT

Check brake booster unit. Refer to BR-25, "Inspection".

Is the inspection result normal?

YES >> GO TO 8.
NO >> Replace hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".

8.CHECK BRAKE FLUID LEAKAGE

Check the brake fluid leakage. Refer to BR-51, "Inspection".

Is the inspection result normal?

YES >> GO TO 9.
NO >> Retighten or replace error-detected parts.

9.CHECK BRAKE PEDAL

Check the brake pedal items. Refer to BR-49, "Inspection".

Is the inspection result normal?

YES >> GO TO 10.
NO >> Adjust the brake pedal items. Refer to BR-49, "Adjustment".

10.CHECK BRAKING FORCE

Check the braking force.

Is the inspection result normal?

YES >> GO TO 11.
NO >> Check each component of brake system.

11.CHECK 12V BATTERY

1. Check the 12V battery terminal connections. Refer to GI-23, "Cautions in Removing Battery Terminal and AV Control Unit (Models with AV Control Unit)" and PG-129, "Removal and Installation (Battery)".
2. Check the 12V battery. Refer to PG-119, "Work Flow".

Is the inspection result normal?

YES >> GO TO 13.
NO >> Repair or replace error-detected parts, and GO TO 12.

12.PERFORM SELF-DIAGNOSIS (1)

CONSULT
1. Record or print self-diagnosis result and freeze frame data (FFD).
2. Erase “Self Diagnostic Result” of “ABS”, “BRAKE”, and “EV/HEV”.
3. Turn the ignition switch OFF to ON.

CAUTION:
- **Be sure to wait for 10 seconds or more after turning the ignition switch OFF or ON.**
- **Never set the vehicle to READY/Never start the engine.**

4. Repeat step 3 two times or more.
5. Select “Self Diagnostic Result” mode of “ABS”, “BRAKE”, and “EV/HEV”.

Is DTC detected?

YES >> Check the DTC.
- “ABS”: Refer to BRC-61, "DTC Index".
- “BRAKE”: Refer to BR-19, "DTC Index".
- “EV/HEV”: Refer to HBC-71, "DTC Index".

NO >> GO TO 13.

13. CHECK CONNECTOR TERMINALS

1. Turn the ignition switch OFF.
2. Disconnect the hydraulic brake booster unit harness connector, then check for failures of pin terminals and connections.

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair or replace error-detected parts, and GO TO 14.

14. PERFORM SELF-DIAGNOSIS (2)

CONSULT
1. Record or print self-diagnosis result and freeze frame data (FFD).
2. Erase “Self Diagnostic Result” of “ABS”, “BRAKE”, and “EV/HEV”.
3. Turn the ignition switch OFF to ON.

CAUTION:
- **Be sure to wait for 10 seconds or more after turning the ignition switch OFF or ON.**
- **Never set the vehicle to READY/Never start the engine.**

4. Repeat step 3 two times or more.
5. Select “Self Diagnostic Result” mode of “ABS”, “BRAKE”, and “EV/HEV”.

Is DTC detected?

YES >> Check the DTC.
- “ABS”: Refer to BRC-61, "DTC Index".
- “BRAKE”: Refer to BR-19, "DTC Index".
- “EV/HEV”: Refer to HBC-71, "DTC Index".

NO >> GO TO 15.

15. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) POWER SUPPLY AND GROUND CIRCUIT AND HYDRAULIC BRAKE BOOSTER UNIT

1. Perform diagnosis of ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-169, "Diagnosis Procedure".
2. Perform diagnosis of hydraulic brake booster unit power supply and ground circuit. Refer to BR-39, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 16.
NO >> Repair or replace error-detected parts.

16. PERFORM SELF-DIAGNOSIS (3)

CONSULT
1. Record or print self-diagnosis result and freeze frame data (FFD).
2. Erase “Self Diagnostic Result” of “ABS”, “BRAKE”, and “EV/HEV”.
3. Turn the ignition switch OFF to ON.

CAUTION:
- **Be sure to wait for 10 seconds or more after turning the ignition switch OFF or ON.**
- **Never set the vehicle to READY/Never start the engine.**

4. Repeat step 3 two times or more.
5. Select “Self Diagnostic Result” mode of “ABS”, “BRAKE”, and “EV/HEV”.

Is DTC detected?

YES >> Check the DTC.
- “ABS”: Refer to BRC-61, "DTC Index".
- “BRAKE”: Refer to BR-19, "DTC Index".
- “EV/HEV”: Refer to HBC-71, "DTC Index".

NO >> GO TO 17.

17. CHECK DATA MONITOR (1)

CONSULT
1. Start the CONSULT and select “ABS” and “Data Monitor” according order.
2. Check the “BATTERY VOLT”. Refer to BRC-54, "Reference Value".

Is the inspection result normal?

YES >> GO TO 18.
NO >> Replace ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".

18. CHECK DATA MONITOR (2)

CONSULT
1. Start the CONSULT and select “BRAKE” and “Data Monitor” according order.
2. Check the “ACC POWER SUPPLY” and “MOTOR POWER SUPPLY”. Refer to BR-18, "Reference Value".

Is the inspection result normal?

YES >> GO TO 19.
NO >> Replace the hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".

19. PERFORM SELF-DIAGNOSIS (4)

CONSULT
1. Record or print self-diagnosis result and freeze frame data (FFD).
2. Erase “Self Diagnostic Result” of “ABS”, “BRAKE”, and “EV/HEV”.
3. Turn the ignition switch OFF to ON.
   CAUTION:
   - **Be sure to wait for 10 seconds or more after turning the ignition switch OFF or ON.**
   - **Never set the vehicle to READY/Never start the engine.**
4. Repeat step 3 two times or more.
5. Select “Self Diagnostic Result” mode of for “ABS”, “BRAKE”, and “EV/HEV”.

Is DTC detected?

YES >> Check the DTC.
- “ABS”: Refer to BRC-61, "DTC Index".
- “BRAKE”: Refer to BR-19, "DTC Index".
- “EV/HEV”: Refer to HBC-71, "DTC Index".

NO >> GO TO 20.

20. CHECK BRAKING FORCE

Check the braking force.

Is the inspection result normal?

YES >> GO TO 21.
NO >> Check each component of brake system.

21. CHECK BRAKE PERFORMANCE

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

Is the inspection result normal?

YES >> GO TO 22.
NO >> Repair or replace error-detected parts

22. CHECK DATA MONITOR (3)

CONSULT
1. Start the CONSULT and select “ABS” and “Data Monitor” according order.
2. Check the “BRK PEDAL STROKE SEN 1” and “BRK PEDAL STROKE SEN 2”. Refer to BRC-54, "Reference Value".

Is the inspection result normal?

YES >> GO TO 23.
NO >> GO TO 24.

23. CHECK DATA MONITOR (4)

CONSULT
Check the “ACCEL POS SIG”. Refer to BRC-54, "Reference Value".

Is the inspection result normal?

YES >> GO TO 24.

NO >> Select “Self Diagnostic Result” mode of “EV/HEV”. Refer to HBC-43, "CONSULT Function".

24. PERFORM SELF-DIAGNOSIS (5)

CONSULT
1. Record or print self-diagnosis result and freeze frame data (FFD).
2. Erase “Self Diagnostic Result” of “ABS”, “BRAKE”, and “EV/HEV”.
3. Turn the ignition switch OFF to ON.
   CAUTION:
   - **Be sure to wait for 10 seconds or more after turning the ignition switch OFF or ON.**
   - **Never set the vehicle to READY/Never start the engine.**
4. Repeat step 3 two times or more.
5. Select “Self Diagnostic Result” mode of “ABS”, “BRAKE”, and “EV/HEV”.

Is DTC detected?

YES >> Check the DTC.
- “ABS”: Refer to BRC-61, "DTC Index".
- “BRAKE”: Refer to BR-19, "DTC Index".
- “EV/HEV”: Refer to HBC-71, "DTC Index".

NO >> GO TO 25.

25. AIR BLEEDING

1. Perform air bleeding. Refer to BR-52, "Bleeding Brake System".
2. Check the brake pedal feel (height or others).

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace the hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".

DOES NOT OPERATE

Description

INFOID:0000000014895671

VDC function, TCS function, ABS function, EBD function, brake limited slip differential (BLSD) function, brake assist function, brake force distribution function or hill start assist function does not operate.

Diagnosis Procedure

INFOID:0000000014895672

CAUTION:
VDC function, ABS function and EBD function never operate when the vehicle speed is 10 km/h (6.2 MPH) or less.

1.CHECK WARNING LAMP

- Check that ABS warning lamp and VDC warning lamp turn ON and turn OFF approx. 1 second after ignition switch is turned ON or driving.
- Check that brake warning lamp (red) and brake system warning lamp (yellow) turn ON and turn OFF after engine start/set the vehicle to READY or driving.

CAUTION:
Brake warning lamp (red) turns ON when parking brake is operated (parking brake switch is ON) (without electric parking brake system) or brake fluid is less than the specified level (brake fluid level switch is ON).

Is the inspection result normal?

YES >> Normal
NO >> Select “Self Diagnostic Result” mode of “ABS”.

BRAKE PEDAL VIBRATION OR OPERATION SOUND OCCURS

Description

INFOID:0000000014895673

- Brake pedal vibrates and motor sound from ABS actuator and electric unit (control unit) occurs, when engine starts/became the vehicle to READY.
- Brake pedal vibrates and motor sound from hydraulic brake booster unit occurs, when engine starts/became the vehicle to READY.
- Brake pedal vibrates during braking.

CAUTION:

- **Vibration may be felt during brake pedal is lightly depressed (just placing a foot on it) in the following conditions. This is a normal operating.**
  - **When shifting gears**
  - **When driving on slippery road**
  - **During cornering at high speed**
  - **When passing over bumps or grooves [Approx. 50 mm (1.97 in) or more]**
  - **When pulling away just after starting engine/vehicle to READY [at approx. 10 km/h (6.2 MPH) or more]**
- **Vibration and sound such as click sound, brake fluid flowing sound, pump motor sound may be heard in the motor room from hydraulic brake booster unit under the following conditions. This is a normal operating.**
  - **When open a door**
  - **When brake pedal is depressed**
  - **When brake pedal is depressed repeatedly**
  - **When driving**
  - **When power switch is turned OFF**
- **Vibration and sound such as click sound, brake fluid flowing sound, pump motor sound may be heard in the motor room from ABS actuator and electric unit (control unit) under the following conditions. This is a normal operating.**
  - **When brake pedal is depressed**

Diagnosis Procedure

INFOID:0000000014895674

1. SYMPTOM CHECK 1

Check that there are pedal vibrations when the engine is started/set the vehicle to READY.

Do vibrations occur?

YES >> GO TO 2.
NO >> Check the brake pedal. Refer to BR-49, "Inspection".

2. SYMPTOM CHECK 2

Check that motor sound from ABS actuator and electric unit (control unit) occurs when the engine starts/set the vehicle to READY.

Does the operation sound occur?

YES >> GO TO 3.
NO >> Select “Self Diagnostic Result” mode of “ABS”.

3. SYMPTOM CHECK 3

Check that motor sound from hydraulic brake booster unit occurs when the engine starts.

Does the operation sound occur?

YES >> GO TO 4.
NO >> Select “Self Diagnostic Result” mode of “ABS”.

4. SYMPTOM CHECK 4

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) or hydraulic brake booster unit. Move them if they are located near ABS actuator and electric unit (control unit) or hydraulic brake booster unit.
NO >> GO TO 5.

5.CHECK TIRE

Check each tire. Refer to WT-74, "Tire Air Pressure".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair or replace error-detected parts.

6.CHECK DISC ROTOR

Check the disc rotor.
- Front: Refer to BR-53, "DISC BRAKE ROTOR : Inspection and Adjustment".
- Rear: Refer to BR-55, "DISC BRAKE ROTOR : Inspection and Adjustment".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Refinish or replace the disc rotor.

7.CHECK BRAKE PAD

Check the brake pad.
- Front: Refer to BR-53, "BRAKE PAD : Inspection and Adjustment".
- Rear: Refer to BR-55, "BRAKE PAD : Inspection and Adjustment".

Is the inspection result normal?

YES >> GO TO 8.
NO >> Replace brake pad.
- Front: Refer to BR-69, "BRAKE PAD : Removal and Installation".
- Rear: Refer to BR-71, "BRAKE CALIPER ASSEMBLY : Removal and Installation".

8.CHECK BRAKE CALIPER

Check the brake caliper assembly.
- Front: Refer to BR-75, "BRAKE PAD : Exploded View".
- Rear: Refer to BR-77, "BRAKE CALIPER ASSEMBLY : Exploded View".

Is the inspection result normal?

YES >> GO TO 9.
NO >> Replace brake caliper assembly.
- Front: Refer to BR-71, "BRAKE CALIPER ASSEMBLY : Removal and Installation".
- Rear: Refer to BR-77, "BRAKE CALIPER ASSEMBLY : Removal and Installation".

9.CHECK BRAKE PIPING

Check brake piping.
- Front: Refer to BR-59, "FRONT : Exploded View".
- Rear: Refer to BR-62, "REAR : Exploded View".

Is the inspection result normal?

YES >> GO TO 10.
NO >> Retighten or replace brake piping.
- Front: BR-60, "FRONT : Removal and Installation".
- Rear: BR-63, "REAR : Removal and Installation" .

10.CHECK HYDRAULIC BRAKE BOOSTER UNIT

Check brake booster unit. Refer to BR-25, "Inspection".

Is the inspection result normal?

YES >> GO TO 11.
NO >> Replace hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".

11.CHECK BRAKE FLUID LEAKAGE

Check the brake fluid leakage. Refer to BR-51, "Inspection".

Is the inspection result normal?

YES >> GO TO 12.
NO >> Retighten or replace error-detected parts.

12.CHECK BRAKE PEDAL

Check the brake pedal items. Refer to BR-49, "Inspection".

Is the inspection result normal?

YES >> GO TO 13.
NO >> Adjust the brake pedal items. Refer to BR-49, "Adjustment".

13. CHECK BRAKING FORCE

Check the braking force.

Is the inspection result normal?

YES >> GO TO 14.
NO >> Check each component of brake system.

14. CHECK SPEEDOMETER

Check the speedometer. Refer to MWI-19, "On Board Diagnosis Function".

Is the inspection result normal?

YES >> GO TO 15.
NO >> Replace combination meter. Refer to MWI-81, "Removal and Installation".

15. PERFORM SELF-DIAGNOSIS [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)]

CONSULT
Select “Self Diagnostic Result” mode of “ABS”.

Is DTC detected?

YES >> Check the DTC. Refer to BRC-61, "DTC Index".
NO >> GO TO 16.

16. CHECK WHEEL SENSOR

Check each 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 17.
NO >> Repair or replace wheel sensor.
- Front wheel sensor: Refer to BRC-200, "FRONT WHEEL SENSOR : Removal and Installation".
- Rear wheel sensor: Refer to BRC-202, "REAR WHEEL SENSOR : Removal and Installation".

17. CHECK BRAKE PERFORMANCE

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

Is the inspection result normal?

YES >> GO TO 18.
NO >> Repair or replace error-detected parts

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

Perform diagnosis of ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-169, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 19.
NO >> Repair or replace error-detected parts.

19. CHECK DATA MONITOR (1)

CONSULT
1. Start the CONSULT and select “ABS” and “Data Monitor” according order.
2. Check the “BRK PEDAL STROKE SEN 1” and “BRK PEDAL STROKE SEN 2”. Refer to BRC-54, "Reference Value".

Is the inspection result normal?

YES >> GO TO 20.

NO >> GO TO 21.

20. CHECK DATA MONITOR (2)

CONSULT

Check the “ACCEL POS SIG”. Refer to HBC-58, "Reference Value".

Is the inspection result normal?

YES >> GO TO 21.
NO >> Select “Self Diagnostic Result” mode of “EV/HEV”. Refer to HBC-43, "CONSULT Function".

21. PERFORM SELF-DIAGNOSIS (HYDRAULIC BRAKE BOOSTER UNIT)

CONSULT

1. Record or print self-diagnosis result and freeze frame data (FFD).
2. Erase “Self Diagnostic Result” of “BRAKE”.
3. Turn the ignition switch OFF to ON.

CAUTION:

- **Be sure to wait for 10 seconds or more after turning the ignition switch OFF or ON.**
- **Never set the vehicle to READY/Never start the engine.**

4. Repeat step 3 two times or more.
5. Select “Self Diagnostic Result” mode of “BRAKE”.

Is DTC detected?

YES >> Check the DTC. Refer to BRC-54, "Reference Value", and GO TO 22.
NO >> Inspection End.

22. AIR BLEEDING

1. Perform air bleeding. Refer to BR-52, "Bleeding Brake System".
2. Check the brake pedal feel (height or others).

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace the hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".

VEHICLE JERKS DURING

Description

INFOID:0000000014895675

The vehicle jerks when VDC function, TCS function, ABS function, EBD function, brake assist function, brake force distribution function or hill start assist function operates.

Diagnosis Procedure

INFOID:0000000014895676

1.CHECK SYMPTOM

Check that the vehicle jerks when VDC function, TCS function, ABS function, EBD function brake assist function, brake force distribution function or hill start assist function operates.

Is the inspection result normal?

YES >> Normal
NO >> GO TO 2.

2.CHECK DISC ROTOR

Check the disc rotor.
- Front: Refer to BR-53, "DISC BRAKE ROTOR : Inspection and Adjustment".
- Rear: Refer to BR-55, "DISC BRAKE ROTOR : Inspection and Adjustment".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Refinish or replace the disc rotor.

3.CHECK BRAKE PAD

Check the brake pad.
- Front: Refer to BR-53, "BRAKE PAD : Inspection and Adjustment".
- Rear: Refer to BR-55, "BRAKE PAD : Inspection and Adjustment".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace brake pad.
- Front: Refer to BR-69, "BRAKE PAD : Removal and Installation".
- Rear: Refer to BR-75, "BRAKE PAD : Removal and Installation".

4.CHECK BRAKE CALIPER

Check the brake caliper assembly.
- Front: Refer to BR-71, "BRAKE CALIPER ASSEMBLY : Exploded View".
- Rear: Refer to BR-77, "BRAKE CALIPER ASSEMBLY : Exploded View".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace brake caliper assembly.
- Front: Refer to BR-71, "BRAKE CALIPER ASSEMBLY : Removal and Installation".
- Rear: Refer to BR-77, "BRAKE CALIPER ASSEMBLY : Removal and Installation".

5.CHECK BRAKE PIPING

Check brake piping.
- Front: Refer to BR-59, "FRONT : Exploded View".
- Rear: Refer to BR-62, "REAR : Exploded View".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Retighten or replace brake piping.
- Front: BR-59, "FRONT : Exploded View" or BR-60, "FRONT : Removal and Installation".
- Rear: BR-62, "REAR : Exploded View" or BR-63, "REAR : Removal and Installation".

6.CHECK HYDRAULIC BRAKE BOOSTER UNIT

Check brake booster unit. Refer to BR-25, "Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".

7. CHECK BRAKE FLUID LEAKAGE

Check the brake fluid leakage. Refer to BR-51, "Inspection".

Is the inspection result normal?

YES >> GO TO 8.
NO >> Retighten or replace error-detected parts.

8. CHECK BRAKE PEDAL

Check the brake pedal items. Refer to BR-49, "Inspection".

Is the inspection result normal?

YES >> GO TO 9.
NO >> Adjust the brake pedal items. Refer to BR-49, "Adjustment".

9. CHECK BRAKING FORCE

Check the braking force.

Is the inspection result normal?

YES >> GO TO 10.
NO >> Check each component of brake system.

10. PERFORM SELF-DIAGNOSIS [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)]

CONSULT
Select “Self Diagnostic Result” mode of “ABS”.

Is DTC detected?

YES >> Check the DTC. Refer to BRC-61, "DTC Index".
NO >> GO TO 11.

11. CHECK CONNECTOR

CONSULT
1. Turn the ignition switch OFF.
2. Disconnect the ABS actuator and electric unit (control unit) harness connector.
3. Check the connector terminal for deformation, disconnection and looseness.
4. Connect the ABS actuator and electric unit (control unit) harness connector, and perform self-diagnosis for “ABS” again.

Is the inspection result normal?

YES >> GO TO 12.
NO >> Poor connection of connector terminal. Repair or replace connector terminal.

12. PERFORM SELF-DIAGNOSIS (2)

CONSULT
Select “Self Diagnostic Result” mode of “ENGINE”, “EV/HEV”, “TRANSMISSION”, “BRAKE” and “ICC/ADAS”.

Is DTC detected?

YES >> Check the DTC.
- “ENGINE”: Refer to EC-109, "DTC Index".
- “EV/HEV”: Refer to HBC-71, "DTC Index".
- “TRANSMISSION”: Refer to TM-70, "DTC Index".
- “BRAKE”: Refer to BR-19, "DTC Index".

NO >> Replace ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".

NORMAL OPERATING CONDITION

Description

INFOID:0000000014895677

Symptom	Result
Brake pedal slightly vibrates and operation sound (motor sound and sound from suspension) occurs when VDC function, TCS function, ABS function, EBD function, brake assist function, brake force distribution function, hill start assist function operates.	This is not a malfunction, because it is caused by VDC function, TCS function, ABS function, EBD function, brake assist function, brake force distribution function and 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 slippery road like rough road, gravel road or snowy road.	
Brake pedal vibrates and operation sound occurs during sudden acceleration and cornering, when VDC function, TCS function, brake assist function or brake force distribution function 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 be felt insufficient depending on the road conditions.	This is not a malfunction, because it is caused by TCS function that puts the highest priority to obtain the optimum traction (stability).
TCS function may operate momentarily, while driving on a road where friction coefficient varies, or when downshifting, or fully depressing accelerator pedal.	
ABS warning lamp and VDC warning lamp may turn ON, when the vehicle is on a rotating turntable or is given a strong shaking or large vibrations on a ship while the engine is running.	In this case, restart the engine on a normal road. If the normal condition is restored, there is no malfunction. In that case, erase “ABS” self-diagnosis result memory with CONSULT.
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).	
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, brake assist function and brake force distribution 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 vehicle on a chassis dynamometer, operate VDC OFF switch so that TCS function is OFF.)
Flow sound of brake fluid from engine room occurs when hill start assist function operates.	This is not a malfunction, because it is caused by hill start assist function that is normally operated.
When the brake pedal is depressed, motor sound may be heard in the engine room.	This is not a malfunction, because it is caused by cooperative regenerative brake function that is normally operated.

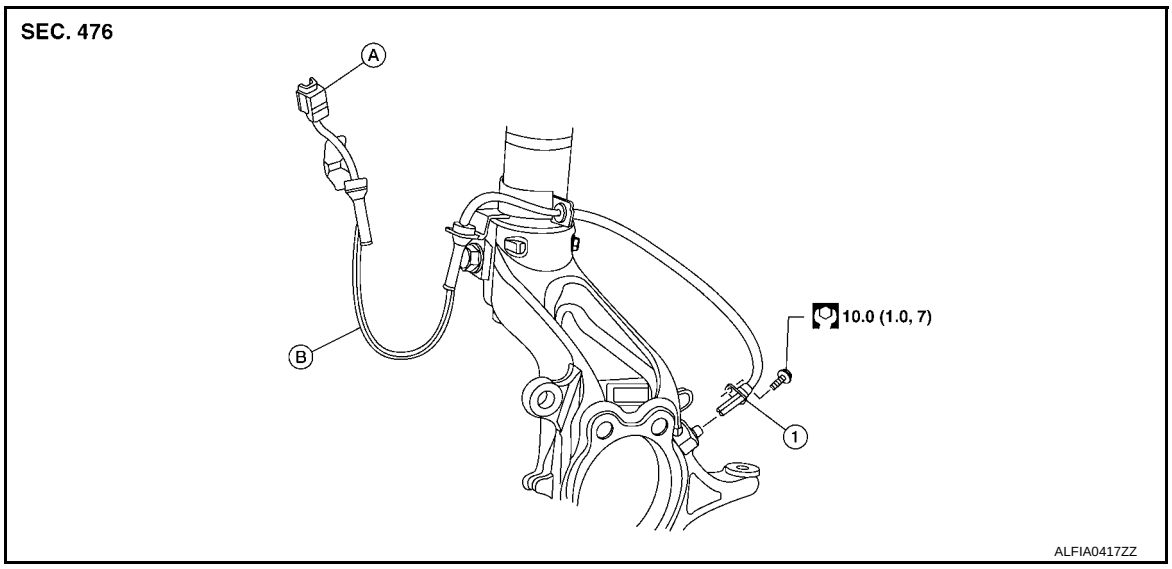
REMOVAL AND INSTALLATION

WHEEL SENSOR

FRONT WHEEL SENSOR

FRONT WHEEL SENSOR : Exploded View

INFOID:0000000014626446



1. Front LH wheel sensor
A. Harness connector
B. Slant line

FRONT WHEEL SENSOR : Removal and Installation

INFOID:0000000014626447

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

REMOVAL

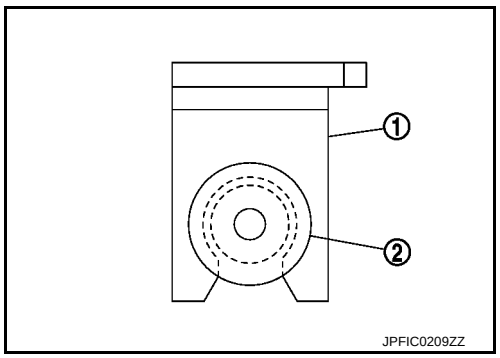
1. Remove the front wheel and tire using power tool. Refer to WT-64, "Adjustment".
2. Partially remove the fender protector to gain access to the wheel sensor harness connector. Refer to EXT-40, "FENDER PROTECTOR : Exploded View".
3. Disconnect the harness connector from the front wheel sensor.
4. Remove the front wheel sensor bolt from the wheel hub and bearing.
5. Remove the front wheel sensor from the strut bracket.
6. Remove the front wheel sensor from the steering knuckle.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:
- **When installing, make sure there is no foreign material such as iron chips 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.**

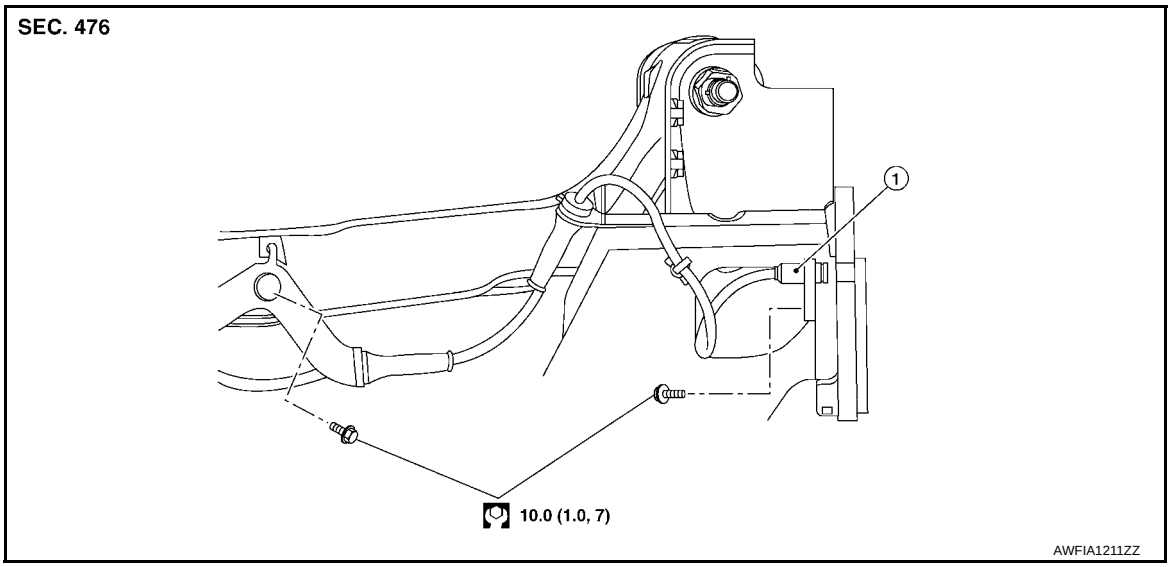


REAR WHEEL SENSOR

REAR WHEEL SENSOR : Exploded View

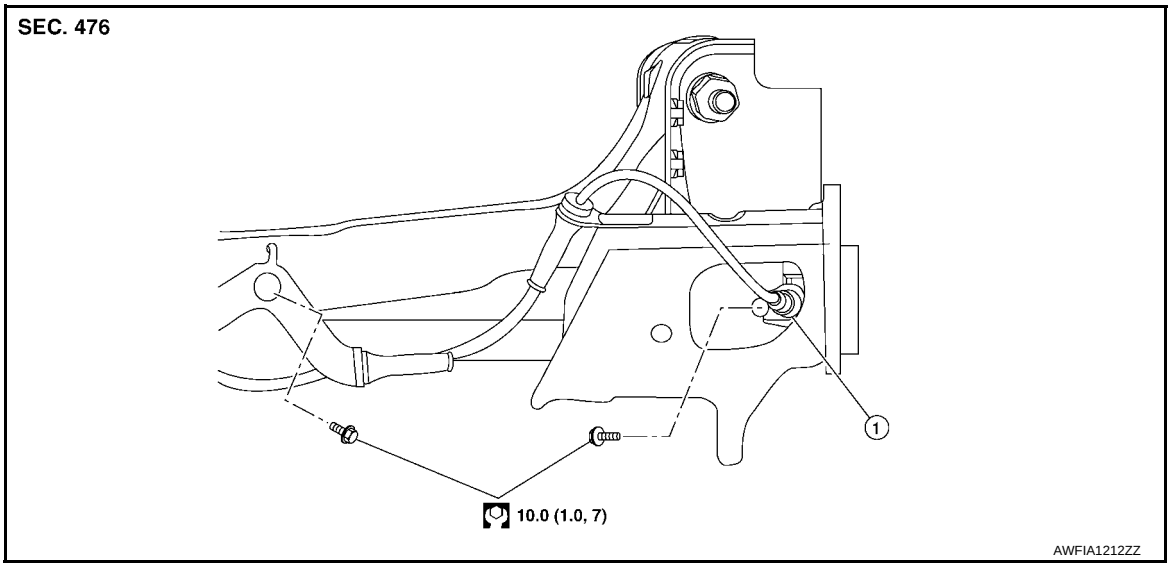
INFOID:0000000014626448

FWD



1. Rear LH wheel sensor

AWD



1. Rear LH wheel sensor

REAR WHEEL SENSOR : Removal and Installation

INFOID:0000000014626449

CAUTION:

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

REMOVAL

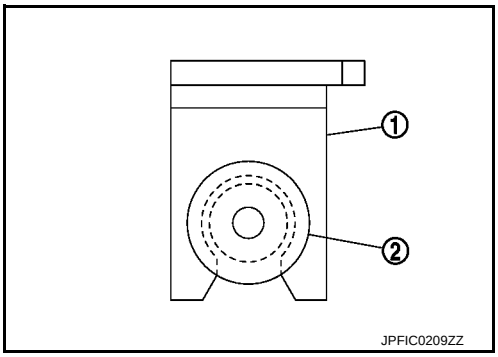
1. Remove the rear wheel and tire using power tool. Refer to WT-64, "Adjustment".
2. Remove the rear wheel sensor bolt.
3. Disconnect the harness connector from the rear wheel sensor.
4. Remove the rear wheel sensor from the wheel hub and bearing (FWD) or the rear axle housing (AWD).
5. Remove the rear wheel sensor harness grommet from the bracket.
6. Remove the bolt, the rear wheel sensor harness, and the rear wheel sensor from the bracket.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- **When installing, make sure there is no foreign material such as iron chips on and in the hole in the rear wheel hub and bearing (FWD) or the rear axle housing (AWD) 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

FRONT SENSOR ROTOR

FRONT SENSOR ROTOR : Removal and Installation - Front Sensor Rotor

INFOID:0000000014626450

The front wheel sensor rotor is an integral part of the wheel hub and bearing and cannot be disassembled. Refer to FAX-9, "Removal and Installation" (FWD) or FAX-46, "Removal and Installation" (AWD).

REAR SENSOR ROTOR

REAR SENSOR ROTOR : Removal and Installation - Rear Sensor Rotor

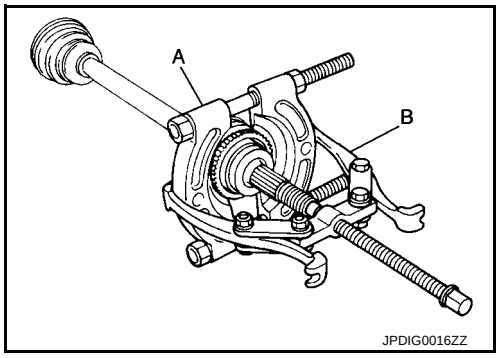
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FWD MODELS - REMOVAL AND INSTALLATION

For FWD vehicles, the rear wheel sensor rotor is an integral part of the wheel hub and bearing and cannot be disassembled. Refer to RAX-7, "Removal and Installation" (FWD).

AWD MODELS - REMOVAL

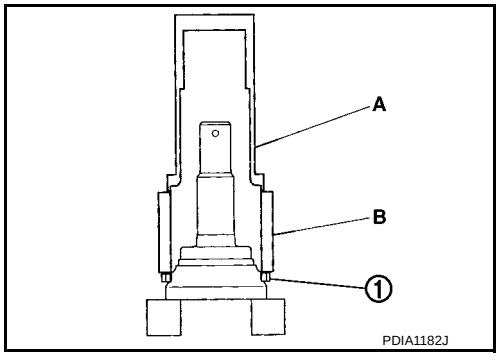
1. Remove drive shaft. Refer to RAX-19, "Removal and Installation".
2. Remove sensor rotor using suitable tools (A) and (B).



AWD MODELS - INSTALLATION

1. Install sensor rotor (1) using Tool (A), Tool (B) and a press.

Tool (A) number : KV38100500 (—)
Tool (B) number : KV40101840 (—)

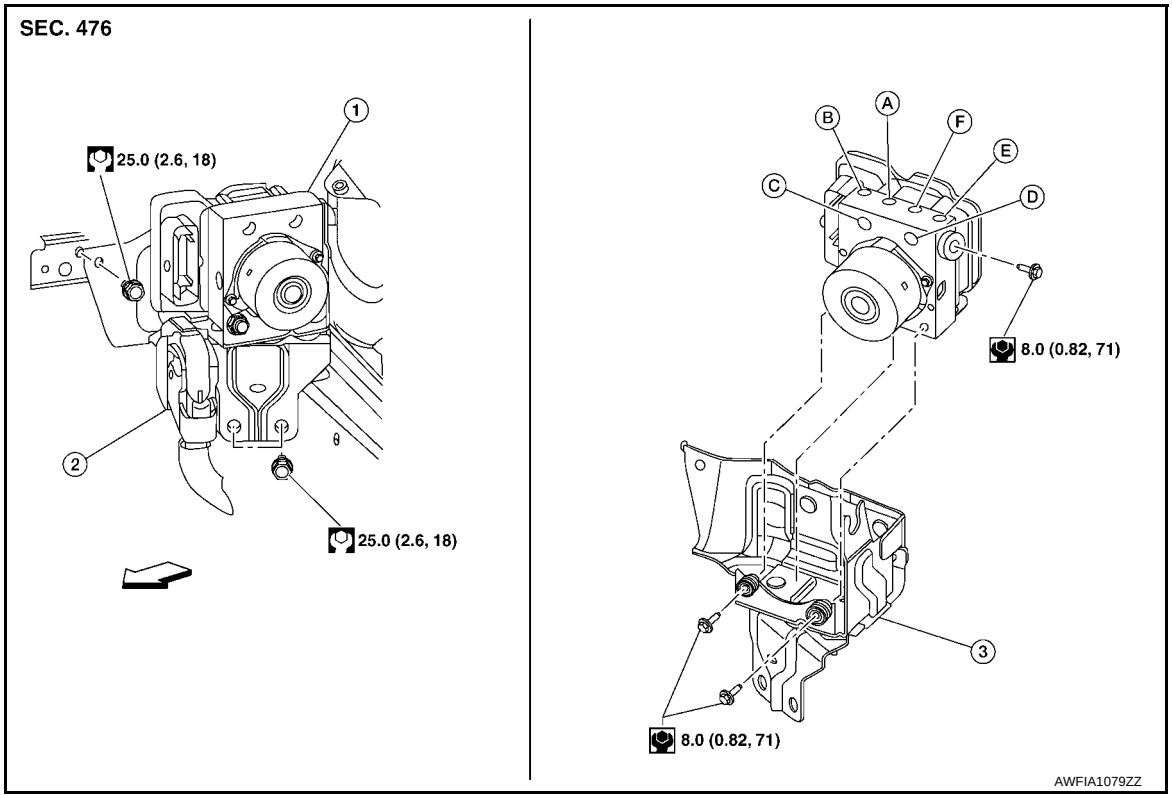


2. The remainder on the installation is in reverse order of removal.

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Exploded View

INFOID:0000000014626452



1. ABS actuator and electric unit (control unit)
2. Connector
3. Bracket
A. To rear LH brake caliper
B. To front RH brake caliper
C. From master cylinder secondary side
D. From master cylinder primary side
E. To front LH brake caliper
F. To rear RH brake caliper
⇦ Front

Removal and Installation

INFOID:0000000014626453

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.**
- **Before replacing ABS actuator and electric unit (control unit), perform "ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)." Refer to BRC-76, "Description".**
- **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-128, "Exploded View".
2. Remove the cowl top cover and cowl top extension. Refer to EXT-37, "Removal and Installation".
3. Separate brake tubes from ABS actuator and electric unit (control unit). Refer to BR-59, "FRONT : Exploded View".
4. Disconnect the harness connector from the ABS actuator and electric unit (control unit).
5. Remove ABS actuator and electric unit (control unit) bracket bolts and bushings.
6. Remove ABS actuator and electric unit (control unit) from vehicle.

INSTALLATION

CAUTION:

- **After replacing ABS actuator and electric unit (control unit), perform "ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)." Refer to BRC-76, "Description".**
- **To install, use flare nut crowfoot and torque wrench.**
- **Do not reuse the bushings.**
- **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.**

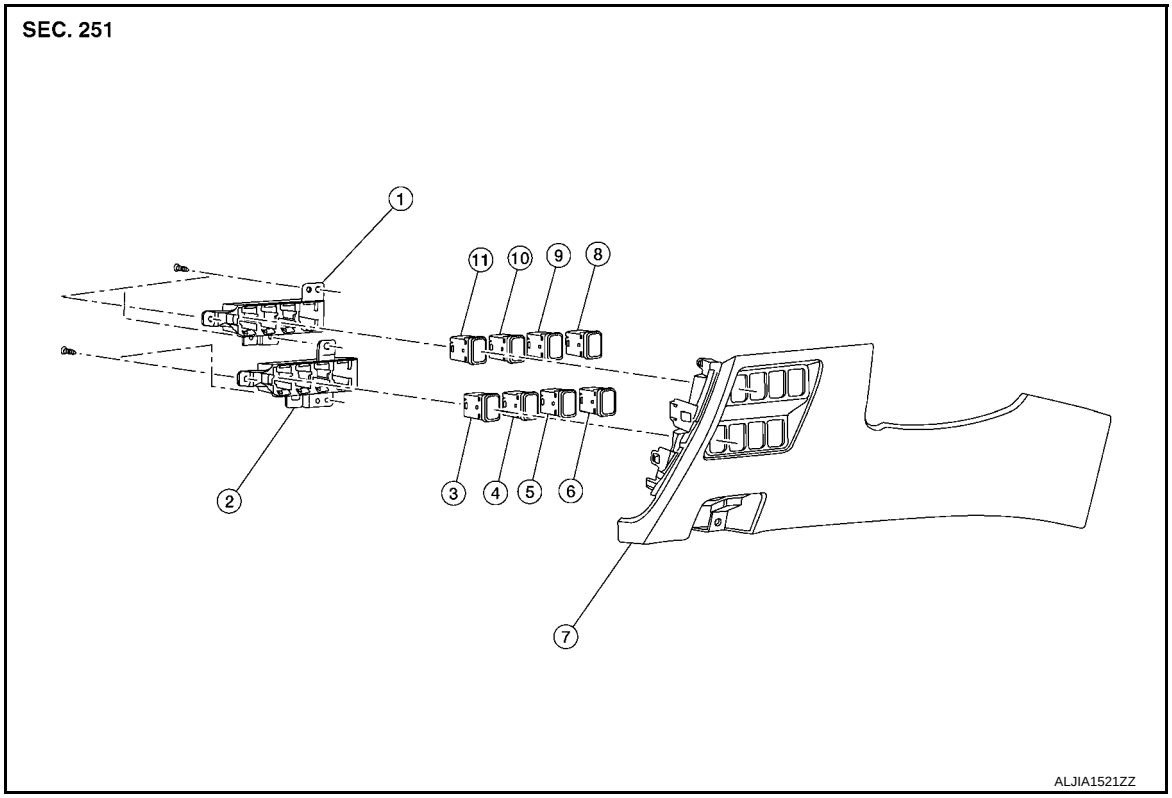
Installation is in the reverse order of removal.

- After work is completed, bleed air from brake tube. Refer to BR-52, "Bleeding Brake System".
- Adjust the neutral position of steering angle sensor. Refer to BRC-77, "Description".
- Perform calibration of the decel G sensor. Refer to BRC-80, "Description".

VDC OFF SWITCH

Exploded View

INFOID:0000000014626454



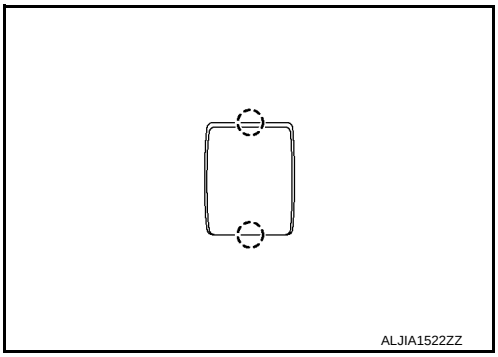
1. Upper switch carrier
2. Lower switch carrier
3. Heated steering wheel switch (if equipped)
4. AWD lock switch (if equipped)
5. SPORT mode switch
6. ECO mode switch
7. Instrument lower panel LH
8. Automatic back door main switch (if equipped)
9. Automatic back door switch (if equipped)
10. Warning system switch
11. VDC OFF switch

Removal and Installation

INFOID:0000000014626455

REMOVAL

1. Remove the instrument lower panel LH. Refer to IP-22, "Removal and Installation".
2. Disconnect the harness connectors from the upper switch carrier switches.
3. Remove the screws from the upper switch carrier.
4. Remove the upper switch carrier from the instrument lower panel LH.
5. Release pawls using suitable tool and remove the VDC OFF switch from the upper switch carrier.
   ◌: Pawl



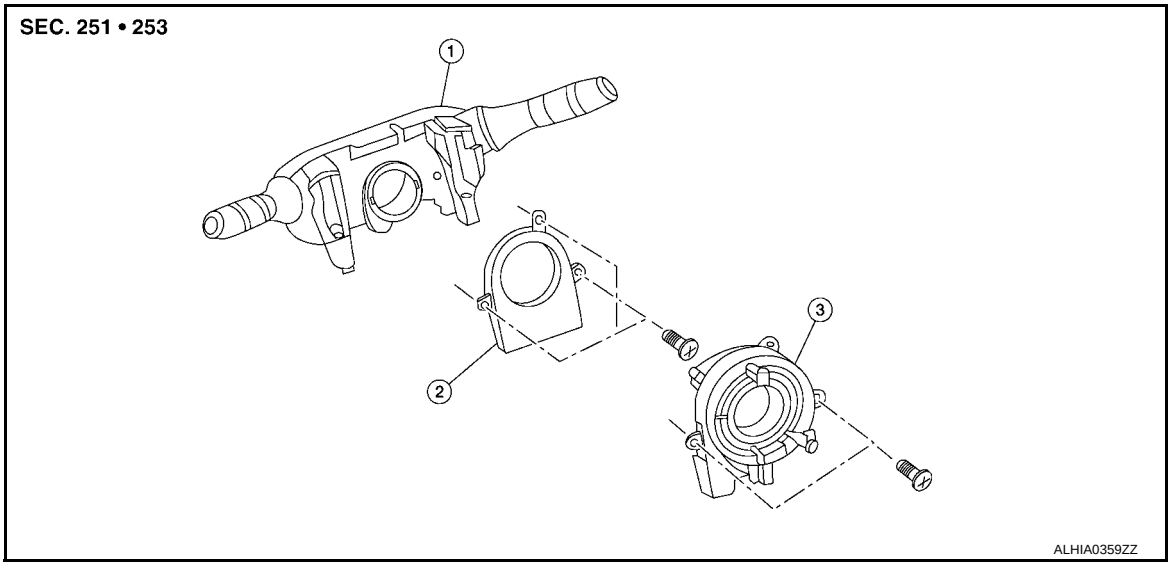
INSTALLATION

Installation is in the reverse order of removal.

STEERING ANGLE SENSOR

Exploded View

INFOID:0000000014626456



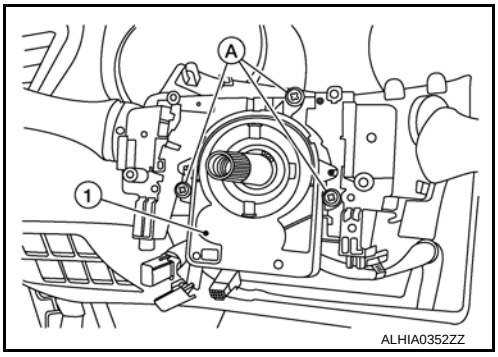
1. Combination switch
2. Steering angle sensor
3. Spiral cable

Removal and Installation

INFOID:0000000014626457

Removal and Installation

1. Remove the spiral cable. Refer to SR-16, "Removal and Installation".
2. Remove screws (A) and then remove steering angle sensor (1).



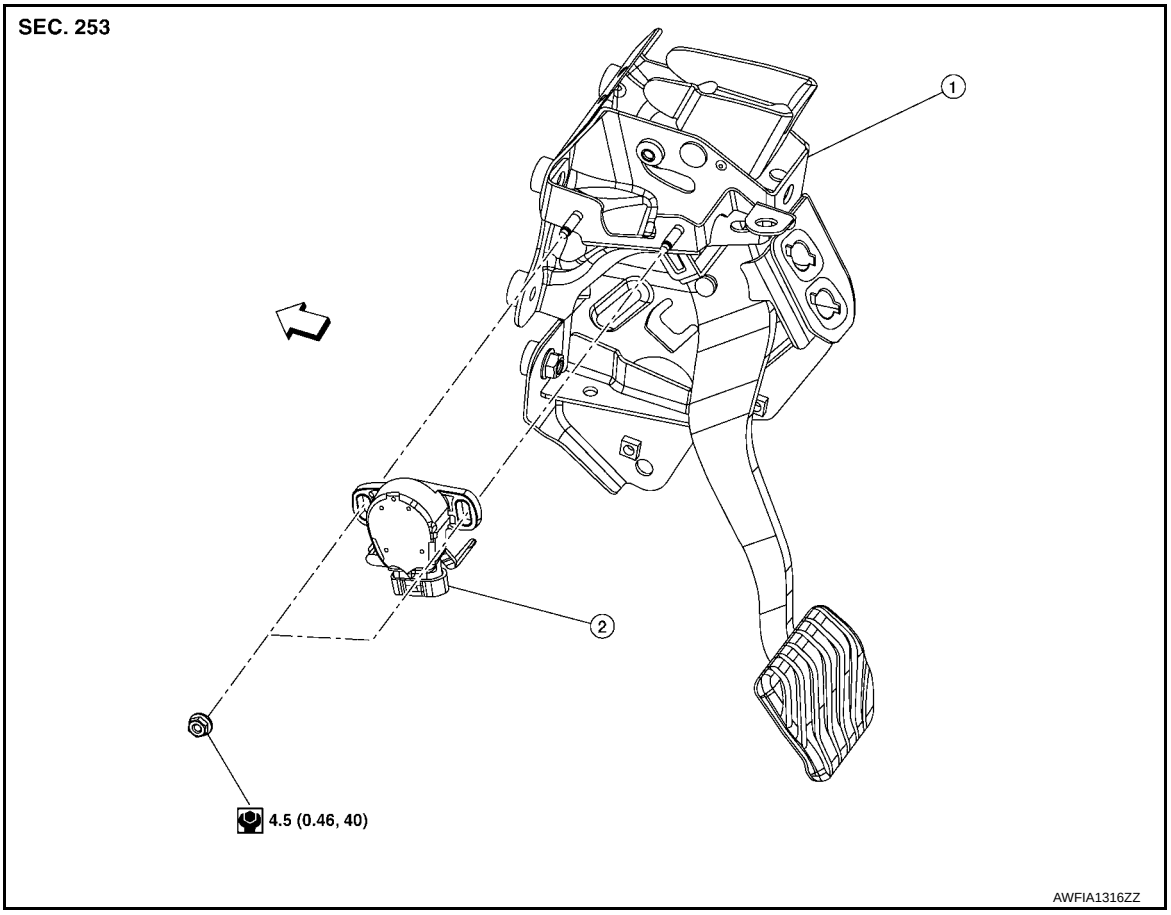
INSTALLATION

Installation is in the reverse order of removal.

BRAKE PEDAL STROKE SENSOR

Exploded View

INFOID:0000000014773329



1. Brake pedal
2. Brake pedal stroke sensor
⇦ Front

Removal and Installation

INFOID:0000000014773330

CAUTION:
- **Replace the brake pedal stroke sensor if it has been dropped or sustained an impact.**
- **Do not use air tools or electric tools for servicing.**

REMOVAL

1. Remove the instrument lower panel LH. Refer to IP-22, "Removal and Installation".
2. Disconnect the harness connector from brake pedal stroke sensor.
3. Remove the brake pedal stroke sensor nuts.
4. Remove the brake pedal stroke sensor.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:
- **Align stroke sensor lever with the slot in brake pedal stroke sensor bracket, or damage may occur.**
- **After installation perform "ZERO POINT RESET." Refer to SRC-38, "ZERO POINT RESET : Description".**
- **Perform calibration when replacing the brake pedal stroke sensor. Refer to BRC-82, "Description".**
- **After installation, press the brake pedal approximately 10 mm to break the stroke sensor pin.**

PRECAUTION

PRECAUTIONS

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

INFOID:0000000014895450

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, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper repair, 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 Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery or batteries, and wait at least three minutes before performing any service.**

Precaution for FEB System Service

INFOID:0000000014895451

WARNING:

- **Failure to follow the warnings and instructions for proper use of the FEB with pedestrian detection system could result in serious injury or death.**
- **The FEB with pedestrian detection system is a supplemental aid to the driver. It is not a replacement for the drivers attention to traffic conditions or responsibility to drive safely. It cannot prevent accidents due to carelessness or dangerous driving techniques.**
- **The FEB with pedestrian detection system does not function in all driving, traffic, weather, and road conditions.**
- **Listed below are the system limitations for the FEB with pedestrian detection system. Failure to operate the vehicle in accordance with these system limitations could result in serious injury or death.**
- **The FEB with pedestrian detection system cannot detect all vehicles or pedestrians under call conditions.**
- **The FEB with pedestrian detection system does not detect the following objects:**
- **Small pedestrians (including small children), animals and cyclists.**
- **Pedestrians in wheel chairs or using mobile transport such as scooters, child-operated toys, or skateboards.**
- **Pedestrians who are seated or otherwise not in a full upright standing or walking position.**
- **Oncoming vehicles**
- **Crossing vehicles**
- **Obstacles on the roadside.**

CAUTION:

- **The FEB with pedestrian detection system has some performance limitations, for example:**
- **If a stationary vehicle is in the vehicle’s path, the FEB with pedestrian detection system will not function when the vehicle is driven at speeds over approximately 50 MPH (80 km/h).**

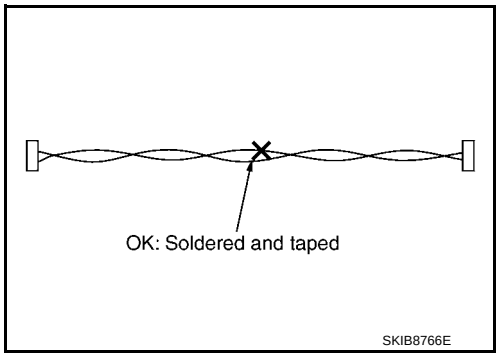
- **For pedestrian detection, the FEB with pedestrian detection system will not function when the vehicle is driven at speeds over approximately 37 MPH (60 km/h) or below approximately 6 MPH (10 km/h).**
- **The FEB with pedestrian detection system will not function for pedestrians in darkness or in tunnels, even if there is street lighting in the areas.**
- **For pedestrians, the FEB with pedestrian detection system will not issue the first warning and will not push the accelerator pedal up**

- The vehicles brake lights come on when any braking is performed by the FEB with pedestrian detection system. Depending on vehicle speed and distance to the vehicle or pedestrian ahead, as well as driving and roadway conditions, the system may help the driver avoid a forward collision or may help mitigate the consequences if a collision should be unavoidable. If the driver is handling the steering wheel, accelerating or braking, the FEB with pedestrian detection system will function later or not function.
- The automatic braking will cease under the following conditions:
- When the steering wheel is turned to avoid a collision.
- When the accelerator pedal is depressed.
- When there is no longer a vehicle or pedestrian detected ahead.
- If the FEB with pedestrian detection system has stopped the vehicle, the vehicle will remain at a standstill for approximately 2 seconds before the brakes are released.
- The FEB with pedestrian detection system will be automatically turned on when the engine is started.
- The PFCW system (if equipped) is integrated into the FEB with pedestrian detection system. There is not a separate selection in the vehicle information display for the PFCW system. When the FEB with pedestrian detection is turned off, the PFCW system is also turned off.

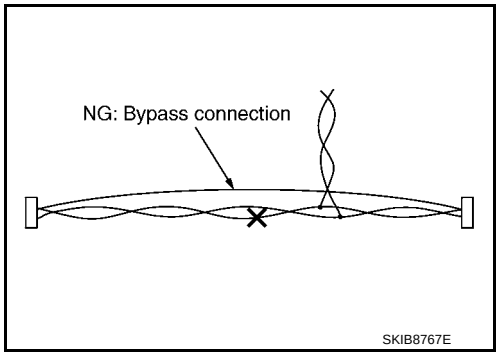
Precaution for Harness Repair

INFOID:0000000014895452

- 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.)

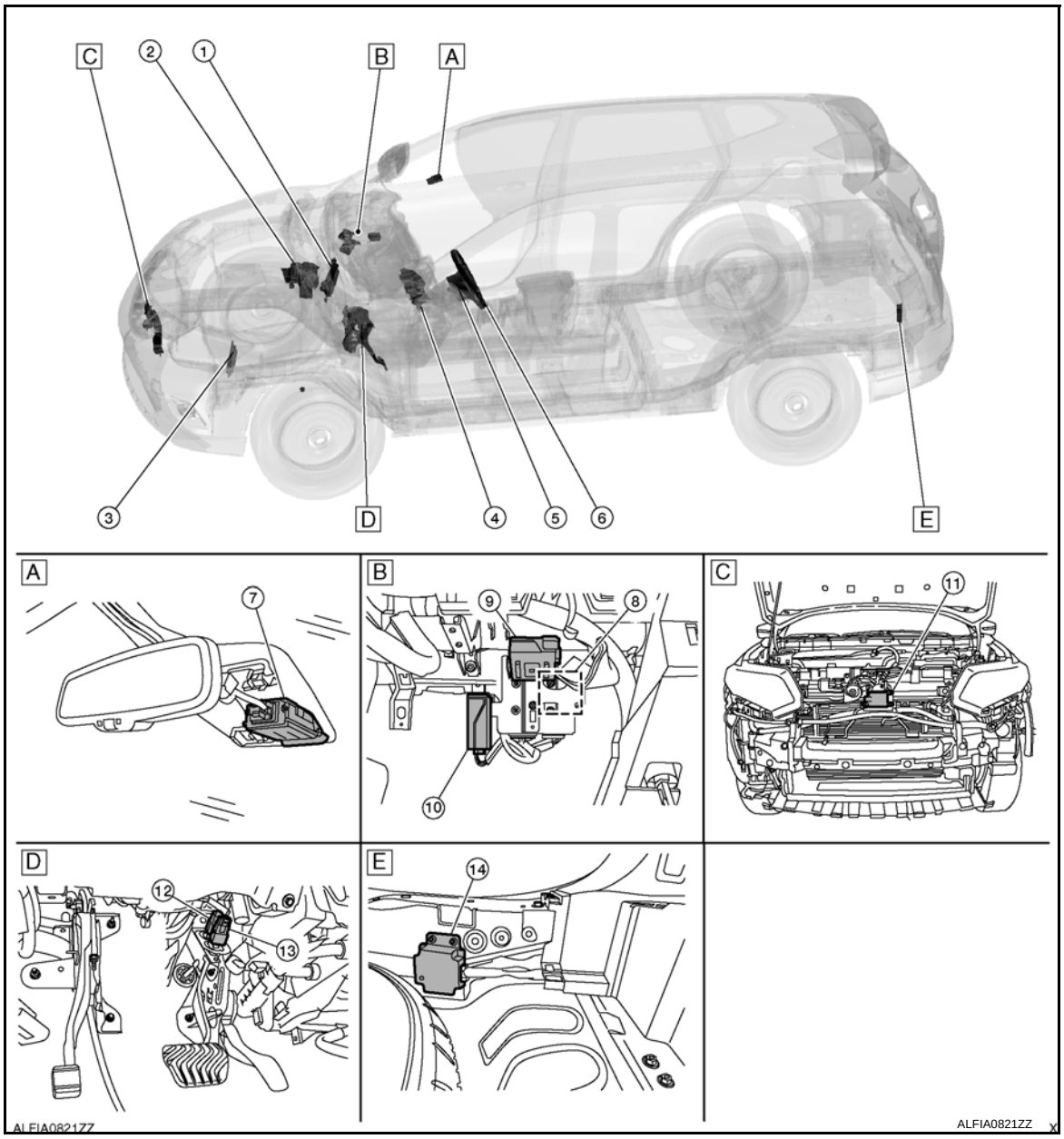


SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000014895453



A. Rear view mirror area

B. Right side of instrument panel (view with glove box removed)

C. Radiator core support assembly (RH)

D. Upper side of brake pedal

D. Left rear of vehicle (view with trim removed)

Component Description

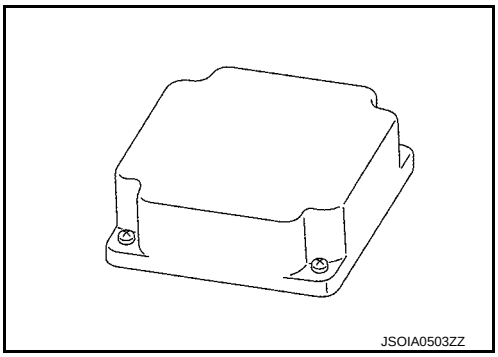
INFOID:0000000014895454

No.	Component		Function
1.	HPCM		Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Accelerator pedal position signal • Engine speed signal • Engine status signal • HPCM status signal • Current regenerative torque signal Mainly receives the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Cooperative regenerative practicable torque signal • Braking force signal Refer to HBC-12, "Component Parts Location" for detailed installation location.
2.	ABS actuator and electric unit (control unit)	Pump/motor	Refer to BRC-12, "ABS Actuator and Electric Unit (Control Unit)"
		Motor relay	
		Actuator relay (main relay)	
		ABS IN valve	
		ABS OUT valve	
		Cut valve 1	
		Cut valve 2	
		Pressure sensor	
3.	TCM		Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. • Current gear position signal • N range signal • P range signal • R range signal • Shift position signal • TCM malfunction signal Refer to TM-15, "CVT CONTROL SYSTEM : Component Parts Location" for detailed installation location.
4.	Combination meter		Refer to BRC-215, "Combination Meter"
5.	Steering angle sensor		Refer to BRC-14, "Steering Angle Sensor".
6.	ICC steering switch		Refer to BRC-215, "ICC Steering Switch"
7.	Lane camera unit		Refer to BRC-214, "Lane Camera Unit"
8.	ADAS control unit 2		Refer to BRC-215, "ADAS Control Unit 2"
9.	Chassis control module		Refer to BRC-215, "Chassis Control Module"
10.	Warning buzzer		Refer to BRC-216, "Warning Buzzer"
11.	ICC sensor		Refer to BRC-214, "ICC Sensor"
12.	Brake pedal position switch		Refer to BRC-214, "Brake Pedal Position Switch / Stop Lamp Switch"
13.	Stop lamp switch		
14.	ADAS control unit		Refer to BRC-214, "ADAS Control Unit"

ADAS Control Unit

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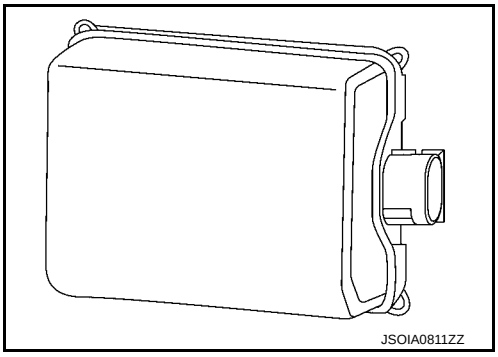
- ADAS control unit is installed at trunk side of the parcel shelf.
- Communicates with each control unit via CAN communication/ITS communication/Chassis communication.
- ADAS control unit included gateway function, and necessary for system control signals are transmitted to each control unit between 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.


JSOIA0503ZZ

ICC Sensor

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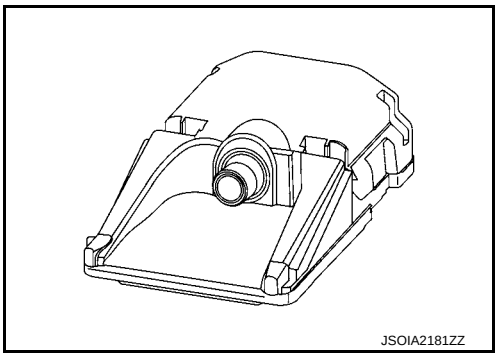
- ICC sensor is installed on the back of the front bumper and detects a vehicle ahead by using millimeter waves.
- ICC sensor detects radar reflected from a vehicle ahead by irradiating radar forward and calculates a distance from the vehicle ahead and relative speed, based on the detected signal.
-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


JSOIA0811ZZ

Lane Camera Unit

INFOID:0000000014895457

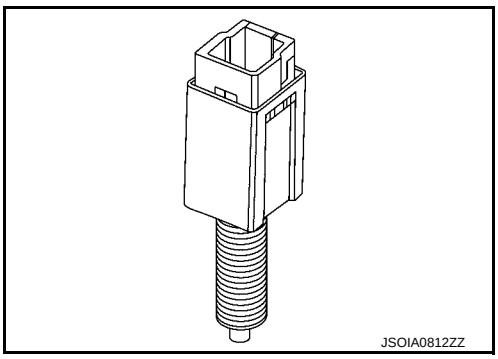
- Lane camera unit is installed to windshield, and detects the lane marker in travel lane and pedestrian ahead.
- Transmits the signal to ADAS control unit and ADAS control unit 2 via chassis communication.


JSOIA2181ZZ

Brake Pedal Position Switch / Stop Lamp Switch

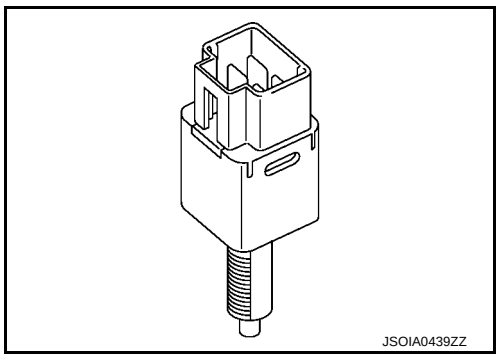
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- Brake pedal position switch is installed at the upper part of the brake pedal and detects a brake operation performed by the driver.


JSOIA0812ZZ

- 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. (VQ35DE)

- 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. (VQ35DE)


JSOIA0439ZZ

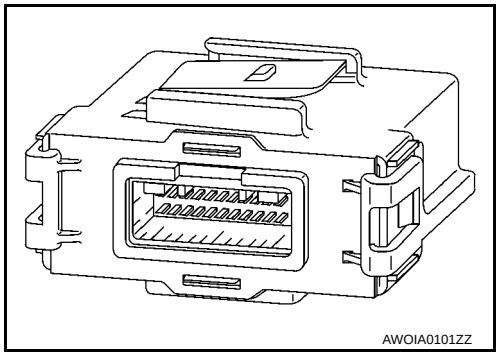
ICC Steering Switch

INFOID:0000000015259202

- ICC steering switch is installed to the steering wheel and allows the driver to operate the ICC system by using this switch.
- ICC steering switch allows the ON/OFF of the Intelligent Cruise Control and the settings of a vehicle speed and distance between vehicles.
- ICC steering switch signal is transmitted to ECM. ECM transmits the signal to the ADAS control unit via CAN communication.

Chassis Control Module

INFOID:0000000015259203


AWOIA0101ZZ

- Chassis control module is installed in the right side of instrument panel behind glove box.
- When the brake is activated by the ICC system, the chassis control module turns ON the stop lamp by bypassing the circuit of the stop lamp, according to a signal transmitted from the ADAS control unit.

Combination Meter

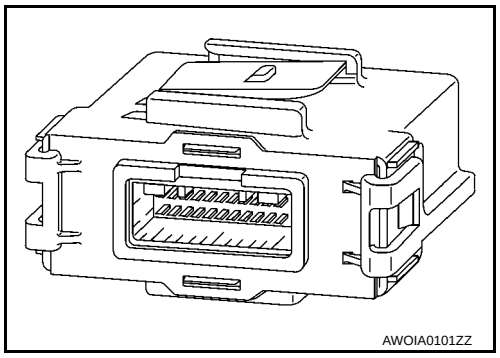
INFOID:0000000015259204

- Performs the following operations using the signals received from the ADAS control unit via the CAN communication.
  - Displays the ICC system operation status using the meter display signal.
  - Illuminates the ICC system warning lamp using the ICC warning lamp signal.
  - Illuminates the FEB indicator lamp using the FEB OFF indicator lamp signal.
  - Operates the buzzer (ICC warning chime) using the buzzer output signal.
- Combination meter turns ON/OFF the FEB system and transmits a system selection signal to the ADAS control unit.

ADAS Control Unit 2

INFOID:0000000015259200

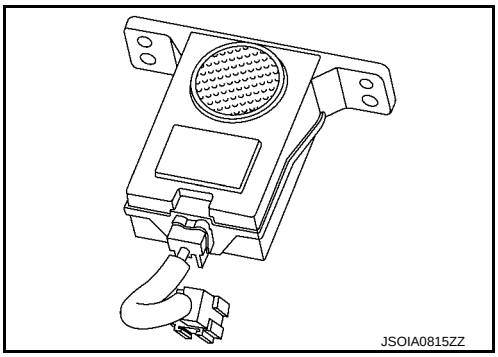
- ADAS control unit 2 is installed on the right side of instrument panel behind glove box.
- When the warning buzzer signal is received from the ADAS control unit, the driver assistance buzzer control module transmits the warning buzzer signal to warning buzzer.


AWOIA0101ZZ

Warning Buzzer

INFOID:0000000015259201

- Warning buzzer is installed behind the instrument panel assembly.
- When a warning buzzer signal is received from the driver assistance buzzer control module, the warning buzzer sounds.

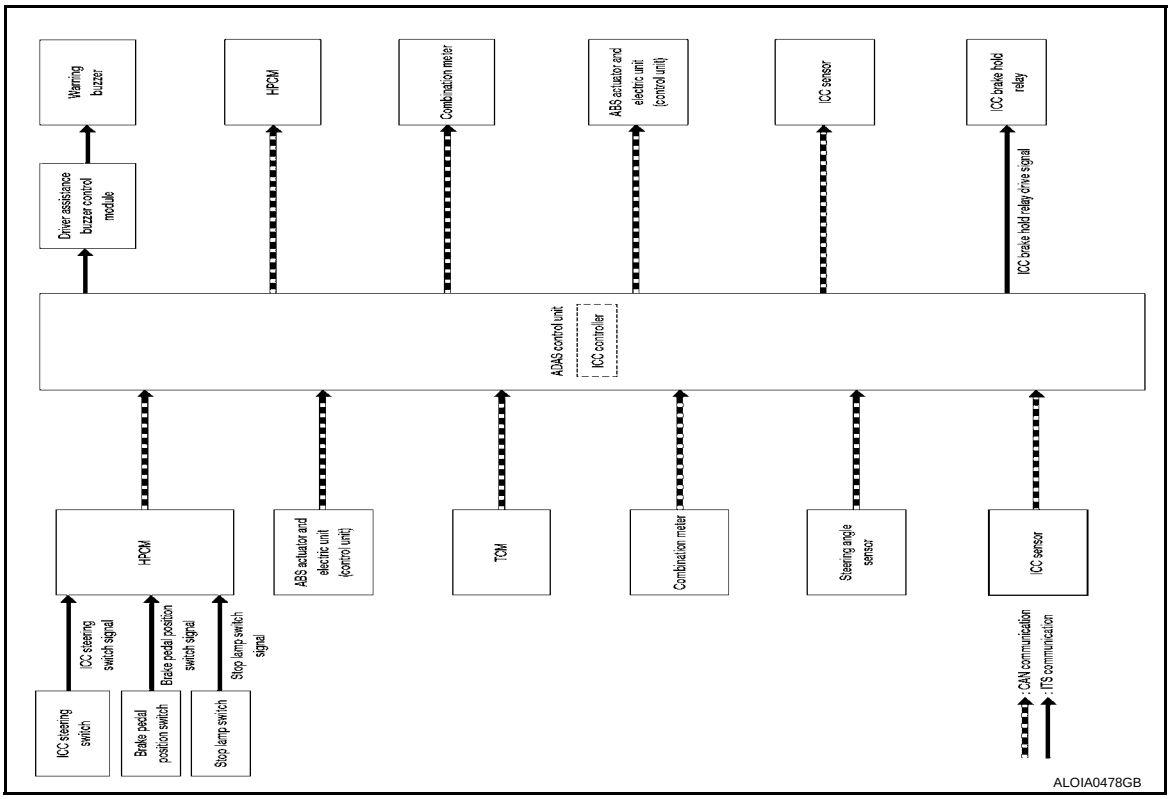


SYSTEM

System Description

INFOID:0000000014895463

SYSTEM DIAGRAM



ADAS CONTROL UNIT INPUT/OUTPUT SIGNAL ITEM

Input Signal Item

Transmit unit	Signal name		Description
HPCM	CAN communication	Closed throttle position signal	Receives idle position state (ON/OFF)
		Accelerator pedal position signal	Receives accelerator pedal position (angle)
		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
TCM	CAN communication	Input speed signal	Receives the number of revolutions of input shaft
		Current gear position signal	Receives a current gear position
		Shift position signal	Receives a selector lever position
		Output shaft revolution signal	Receives the number of revolutions of output shaft

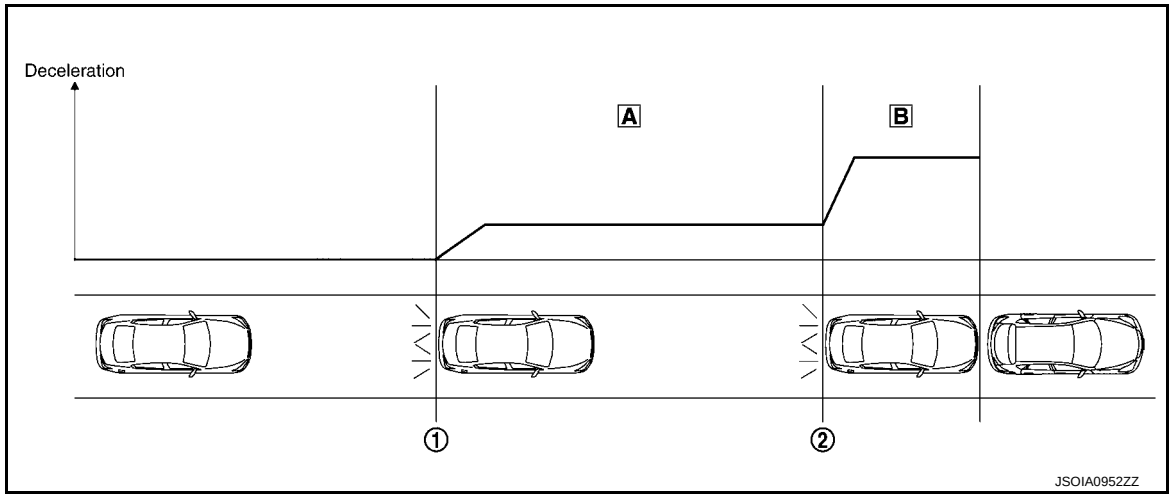
Transmit unit	Signal name		Description
ABS actuator and electric unit (control unit)	CAN communication	ABS malfunction signal	Receives a malfunction state of ABS
		ABS operation signal	Receives an operational state of ABS
		ABS warning lamp signal	Receives an ON/OFF state of ABS warning lamp
		TCS malfunction signal	Receives a malfunction state of TCS
		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
Steering angle sensor	CAN communication	Steering angle sensor malfunction signal	Receives a malfunction state of 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
Display control unit	CAN communication	System selection signal	Receives a selection state of each item in “Driver Aids” selected with the integral switch
ICC sensor	ITS communication	ICC sensor signal	Receives detection results, such as the presence or absence of a leading vehicle and distance from the vehicle
Lane camera unit	ITS communication	Pedestrian ahead signal	Receives detection results of pedestrian ahead of vehicle

Output Signal Item

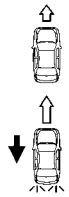
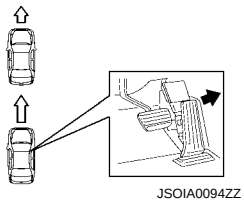
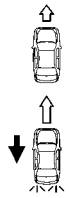
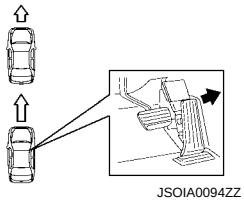
Reception unit	Signal name			Description
Combination meter	CAN communication	Meter display signal	Vehicle ahead detection indicator signal	Transmits a signal to display a state of the system on the information display
			FEB/PFCW system display signal	
			FEB warning signal	
ICC sensor	ITS communication	Vehicle speed signal		Transmits a vehicle speed calculated by the ADAS control unit
		Steering angle sensor signal		Transmits a steering angle sensor signal received from the steering angle sensor
Driver assistance buzzer control module	ITS communication	Driver assistance buzzer signal		Transmits a driver assistance buzzer signal to active the buzzer
ICC brake hold relay	ICC brake hold relay drive signal			Activates the brake hold relay and turns ON the stop lamp

FUNCTION DESCRIPTION

- The FEB system measures the distance from a vehicle ahead using the ICC sensor installed in the front bumper.
- When the system judges that a vehicle is being approached, “approach warning” is displayed in the combination meter and at the same time a warning buzzer sounds, the accelerator pedal is moved upward, and the brake is operated.
- When it is further judged that the vehicle may collide with the vehicle ahead, the system operates the brake strongly to avoid collision while it displays FEB warning on the combination meter and rings a warning chime.



① Start of warning and partial brake
② Start of harder brake
A Applies partial braking and moves the accelerator pedal to upward direction
B Harder brake

Situation		Brake	Accelerator pedal actuator	Warning
No obstacle approached		No operation	No operation	—
①	Start of warning and partial brake	Partial brake  JSOIA0222ZZ	Operation  JSOIA0094ZZ	• Sounds the buzzer • Blinks vehicle ahead indicator
②	Start of harder brake	Harder brake  JSOIA0222ZZ	Operation  JSOIA0094ZZ	• Sounds the buzzer (Higher pitched buzzer) • Indicates FEB warning

CAUTION:
It is the driver′s responsibility to stay alert, drive safely and be in control of the vehicle at all times. As there is a performance limit, it may not provide a warning or brake in certain conditions.
NOTE:
The FEB system shares component parts and diagnosis with the ICC system.

OPERATION DESCRIPTION

- The ICC sensor measures the distance from the obstacle ahead and transmits the ICC sensor signal to the ADAS control unit.
- The lane camera measures the distance from a pedestrian and transmits the pedestrian ahead signal to the ADAS control unit.
- The ADAS control unit judges the possibility of a collision from the ICC sensor signal and the vehicle speed.
- The ADAS control unit judges the possibility of a collision from the ICC sensor signal, the pedestrian ahead signal and the vehicle speed.
- The ADAS control unit performs the following operations according to the degree of possibility of a collision.
  - Transmits the driver assistance buzzer signal to the driver assistance buzzer control module and sounds the buzzer.

- Transmits the meter display signal to the combination meter and displays the vehicle ahead indicator/FEB warning.
- Transmits the brake fluid pressure control signal to the electrically-driven intelligent brake unit and performs the brake control.
- Transmits the ICC brake hold drive signal and turns ON the stop lamp.

NOTE:

- ON/OFF of FEB/PFCW system is performed with the integral switch.
- The system ON/OFF condition will be memorized even if the ignition switch turns OFF.
- The FEB system operates under the following conditions.
  - The FEB system will function when the vehicle is driven at speeds of approximately 5 km/h (3 MPH) and above, and when the vehicle's speed is approximately 5 km/h (3 MPH) faster than that of the vehicle ahead.
- Setting of FEB is performed in synchronization with the log-in function of on-board personal assistant. For details of the log-in function, refer to BRC-217, "System Description".

Operation Condition

ADAS control unit performs the control when the following conditions are satisfied.

- When the FEB/PFCW system setting on the integral switch is ON.
- When the vehicle speed is above approximately 5 km/h (3 MPH).
- There is a possibility of a collision with the vehicle ahead.

No Operation Condition

The ADAS control unit is not operate when the system is under the conditions of the no operation condition.

- When the FEB system setting on the integral switch is OFF.
- When the vehicle ahead is not detected.
- When the vehicle speed is below approximately 5 km/h (3 MPH).

Operation Cancellation Condition

The ADAS control unit cancels the operation when the system is under any conditions of the operation cancellation condition.

- When the system judges that the vehicle comes to a standstill by the system control.
- When the system malfunction occurs.
- When the ICC sensor area of the front bumper is dirty and the measurement of the distance between the vehicles becomes difficult.

Fail-safe (ADAS Control Unit)

INFOID:0000000015259821

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 display	Description
Vehicle-to-vehicle distance control mode	High-pitched tone	ICC system warning	Cancel
Conventional (fixed speed) cruise control mode	High-pitched tone	ICC system warning	Cancel
Forward Emergency Braking (FEB)	High-pitched tone	FEB warning	Cancel

Fail-safe (ADAS Control Unit 2)

INFOID:0000000015259822

If a malfunction occurs in each system, ADAS control unit 2 cancels each control, sounds a beep, and turns ON the warning or indicator lamp.

System	Buzzer	Warning lamp/Warning display	Description
Lane Departure Warning (LDW)	—	Warning systems indicator (Lane position: Yellow)	Cancel
Lane Departure Prevention (LDP)	Low-pitched tone	Warning systems indicator (Lane position: Yellow)	Cancel

System	Buzzer	Warning lamp/Warning display	Description
Blind Spot Warning (BSW)	—	Blind Spot Warning warning lamp	Cancel
Rear Cross Traffic Alert (RCTA)	—	Rear Cross Traffic Alert warning	Cancel

WARNING/INDICATOR/CHIME LIST

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

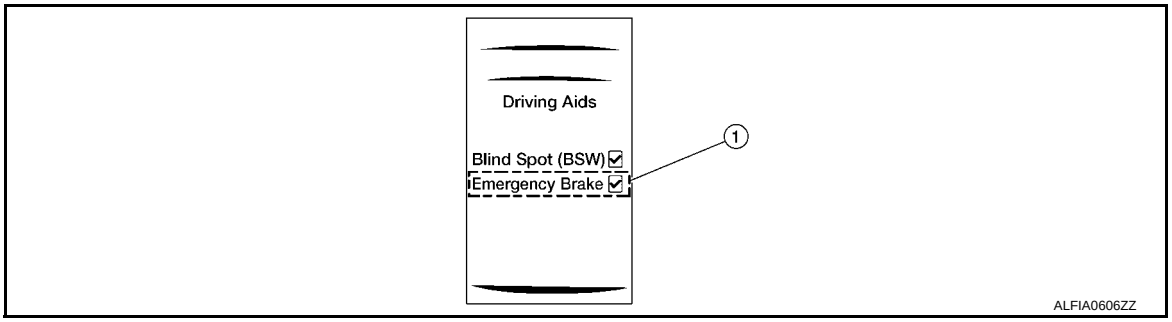
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Name	Design	Function
FEB warning lamp	 ALFIA0508ZZ	• For layout, refer to MWI-6, "METER SYSTEM : Design".

OPERATION

Switch Name and Function

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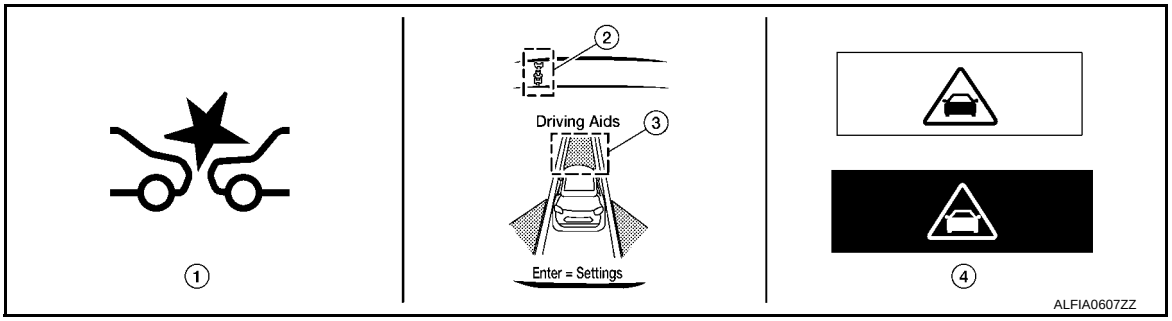


No.	Switch name	Description
①	FEB system setting screen (Information display)	The setting of FEB/PFCW system can be switched between ON and OFF

Menu Displayed by Pressing Each Switch

INFOID:0000000015259631

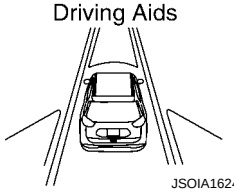
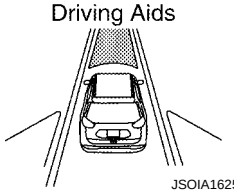
SYSTEM DISPLAY



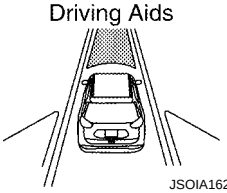
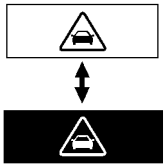
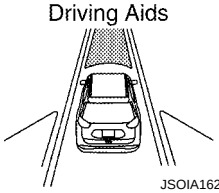
No.	Switch name	Description
①	FEB warning lamp	• FEB warning lamp indicates that an abnormal condition is present in FEB system • When the FEB system turns OFF, the FEB warning lamp will illuminate.
②	Vehicle ahead indicator	• Indicates whether it detects a vehicle ahead. • Blinks when there is a possibility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

DISPLAY AND WARNING

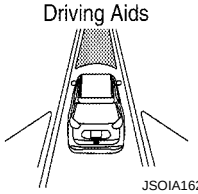
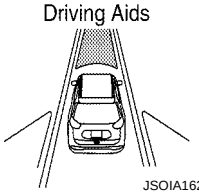
Setting Display

System status	Condition	Display on combination meter	Display on combination meter	FEB warning lamp	Buzzer
		Upper part	Middle part		
FEB OFF	—	—	Driving Aids  JSOIA1624ZZ		—
FEB ON	System ON	 JSOIA1428ZZ	White Driving Aids  JSOIA1625ZZ	OFF	—

Warning Operation

System status	Action	Display on combination meter	Display on combination meter	FEB warning lamp	Buzzer
		Upper part	Middle part		
There is a possibility of a collision with the vehicle ahead	Partial brake	Yellow (Blink)  JSOIA1290ZZ	Driving Aids  JSOIA1625ZZ		Short continuous beeps
An obstacle ahead is avoided due to the system applying braking.	Harder brake	Red⇔White  JSOIA1477ZZ	Driving Aids  JSOIA1625ZZ		Continuous beeps

Warning Display

System status	Condition	Display on combination meter	Display on combination meter	FEB warning lamp	Master warning lamp	Buzzer
		Upper part	Middle part			
FEB system malfunction	The FEB system is automatically canceled.*	Yellow (Blink)  JSOIA1290ZZ	Driving Aids  JSOIA1625ZZ	 ALFIA0508ZZ	Yellow 	Beep
Dirt around the distance sensor		Yellow (Blink)  JSOIA1290ZZ	Driving Aids  JSOIA1625ZZ	 ALFIA0508ZZ	Yellow 	Beep

NOTE:
*: The system operates if the ignition switch is turned OFF⇒ON after the condition improves

HANDLING PRECAUTION

Description

INFOID:0000000014895468

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 carelessness 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 70 km/h (45 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 push the accelerator pedal up or 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.

DIAGNOSIS SYSTEM (ADAS CONTROL UNIT)

CONSULT Function (ICC/ADAS)

INFOID:0000000015259632

APPLICATION ITEMS

CONSULT performs the following functions via CAN communication using ADAS control unit.

Diagnosis mode	Description
Configuration	• The vehicle specification that is written in ADAS control unit can be displayed or stored • The vehicle specification can be written when ADAS control unit is replaced
Work support	Displays causes of automatic system cancellation occurred during system control
Self Diagnostic Result	Displays the name of a malfunctioning system stored in the ADAS control unit
Data Monitor	Displays ADAS control unit input/output data in real time
Active Test	Enables an operational check of a load by transmitting a driving signal from the ADAS control unit to the load
ECU Identification	Displays ADAS control unit part number
CAN Diag Support Monitor	Displays a reception/transmission state of CAN communication and ITS communication

CONFIGURATION

Configuration includes functions as follows.

Function		Description
Read/Write Configuration	Before Replace ECU	Allows the reading of vehicle specification written in ADAS control unit to store the specification in CONSULT.
	After Replace ECU	Allows the writing of the vehicle information stored in CONSULT into the ADAS control unit.
Manual Configuration		Allows the writing of the vehicle specification into the ADAS control unit by hand.

WORK SUPPORT

Work support items	Description
CAUSE OF AUTO-CANCEL 1	Displays causes of automatic system cancellation occurred during control of the following systems • Vehicle-to-vehicle control mode • Conventional (fixed speed) control mode • Forward Emergency Braking (FEB)

NOTE:

- Causes of the maximum five cancellations (system cancel) are displayed.
- The displayed cancellation causes display the number of the ignition switch ON/OFF up to 254. It is fixed to 254 if it is over 254. It returns to 0 when the same cancellation cause is detected again.

Display Items for The Cause of Automatic Cancellation 1

Cause of cancellation	Vehicle-to-vehicle distance control mode	Conventional (fixed speed) cruise control mode	Forward Emergency Braking	Description
OPERATING ABS	×		×	ABS function was operated
OPERATING TCS	×	×		TCS function was operated
OPERATING VDC	×	×	×	VDC function was operated
HPCM CIRCUIT	×	×		HPCM did not permit ICC operation
OPE SW VOLT CIRC	×	×		The ICC steering switch input voltage is not within standard range
OP SW DOUBLE TOUCH	×	×		ICC steering switches were pressed at the same time
VHCL SPD DOWN	×	×		Vehicle speed lower than the speed as follows • Vehicle-to-vehicle distance control mode is 24 km/h (15 MPH) • Conventional (fixed speed) cruise control mode is 32 km/h (20 MPH)
WHL SPD ELEC NOISE	×	×		Wheel speed sensor signal caught electromagnetic noise
VDC/TCS OFF SW	×		×	VDC OFF switch was pressed
VHCL SPD UNMATCH	×	×		Wheel speed became different from CVT vehicle speed
TIRE SLIP	×	×		Wheel slipped
IGN LOW VOLT	×	×	×	Decrease in ADAS control unit ignition voltage
PARKING BRAKE ON	×	×		The parking brake is operating
WHEEL SPD UNMATCH	×	×		The wheel speeds of 4 wheels are out of the specified values
INCHING LOST	×			A vehicle ahead is not detected during the following driving when the vehicle speed is approximately 24 km/h (15 MPH) or less
CAN COMM ERROR	×	×	×	ADAS control unit received an abnormal signal with CAN communication
ABS/TCS/VDC CIRC	×	×	×	An abnormal condition occurs in VDC/TCS/ABS system
ECD CIRCUIT	×	×	×	An abnormal condition occurs in ECD system
ENG SPEED DOWN	×	×		Engine speed became extremely low while controlling ICC system
ASCD VHCL SPD DTAC		×		Vehicle speed is detached from set vehicle speed
ASCD DOUBLE COMD		×		Cancel switch and operation switch are detected simultaneously
ICC SENSOR CAN COMM ERR	×		×	Communication error between ADAS control unit and the ICC sensor
ABS WARNING LAMP	×			ABS warning lamp ON
FR RADAR BLOCKED	×		×	Inclusion of dirt or stains on the ICC sensor area of the front bumper
FEB) CURVATURE			×	Road curve was more than the specified value
FEB) YAW RATE			×	Detected yawing speed was more than the specified value
FEB) LTRL ACCELERATION			×	Detected lateral speed is the specified value or more

RADAR INTERFERENCE	×		×	ICC sensor receives electromagnetic interference
NO RECORD	×	×		—

SELF DIAGNOSTIC RESULT

Refer to DAS-39, "DTC Index".

NOTE:

- The details of time display are as per the following.
- CRNT: A malfunction is detected now
- PAST: A malfunction was detected in the past
- IGN counter is displayed on FFD (Freeze Frame Data).
- 0: The malfunctions that are detected now
  CAN communication system (U1000, U1010)
- 1 - 39: It increases like 0 → 1 → 2 ··· 38 → 39 after returning to the normal condition whenever the ignition switch OFF → ON. It returns to 0 when a malfunction is detected again in the process.
- If it is over 39, it is fixed to 39 until the self-diagnosis results are erased.
  Other than CAN communication system (Other than U1000, U1010)
- 1 - 49: It increases like 0 → 1 → 2 ··· 38 → 49 after returning to the normal condition whenever the ignition switch OFF → ON. It returns to 0 when a malfunction is detected again in the process.
- If it is over 49, it is fixed to 49 until the self-diagnosis results are erased.

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.

Monitored item [Unit]	ALL SIG (ICC)	MAIN SIG (ICC)	MAIN SIG (LDW/LDP)	MAIN SIG (BSW/BSI)	Description
MAIN SW [On/Off]	×	×	×	×	Indicates [On/Off] status as judged from ICC steering switch
SET/COAST SW [On/Off]	×	×			Indicates [On/Off] status as judged from ICC steering switch
CANCEL SW [On/Off]	×	×			Indicates [On/Off] status as judged from ICC steering switch
RESUME/ACC SW [On/Off]	×	×			Indicates [On/Off] status as judged from ICC steering switch
DISTANCE SW [On/Off]	×				Indicates [On/Off] status as judged from ICC steering switch
CRUISE OPE [On/Off]	×	×			Indicates whether controlling or not (ON means “controlling”)
BRAKE SW [On/Off]	×	×	×	×	Indicates [On/Off] status as judged from brake pedal position switch signal (HPCM transmits brake switch signal through CAN communication)
STOP LAMP SW [On/Off]	×	×	×	×	Indicates [On/Off] status as judged from stop lamp switch signal (HPCM transmits stop lamp switch signal through CAN communication)
IDLE SW [On/Off]	×				Indicates [On/Off] status of idle switch read from ADAS control unit through CAN communication (HPCM transmits On/Off status through CAN communication)
VHCL SPEED SE [km/h] or [mph]	×	×	×	×	Indicates vehicle speed calculated from ADAS control unit through CAN communication [ABS actuator and electric unit (control unit) transmits vehicle speed signal (wheel speed) through CAN communication]
ENGINE RPM [rpm]	×				Indicates engine speed read from ADAS control unit through CAN communication (HPCM transmits engine speed signal through CAN communication)
BA WARNING [On/Off]	×				Indicates [On/Off] status of FEB indicator lamp output

Monitored item [Unit]	ALL SIG (ICC)	MAIN SIG (ICC)	MAIN SIG (LDW/LDP)	MAIN SIG (BSW/BSI)	Description
STP LMP DRIVE [On/Off]	×	×			Indicates [On/Off] status of brake hold drive signal
D RANGE SW [On/Off]	×				Indicates [On/Off] status of “D” or “M” positions read from ADAS control unit through CAN communication; ON when position “D” or “M” (TCM transmits shift position signal through CAN communication).
NP RANGE SW [On/Off]	×				Indicates shift position signal read from ADAS control unit through CAN communication (TCM transmits shift position signal through CAN communication)
PKB SW [On/Off]	×				Parking brake switch status [On/Off] judged 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)
PWR SUP MONI [V]	×	×			Indicates IGN voltage input by ADAS control unit
VHCL SPD AT [km/h] or [mph]	×				Indicates vehicle speed calculated from CVT vehicle speed sensor read from ADAS control unit through CAN communication (TCM transmits CVT vehicle speed sensor signal through CAN communication)
THRTL OPENING [%]	×	×			Indicates throttle position read from ADAS control unit through CAN communication (HPCM transmits accelerator pedal position signal through CAN communication).
GEAR [1, 2, 3, 4, 5, 6, 7]	×				Indicates CVT gear position read from ADAS control unit through CAN communication (TCM transmits current gear position signal through CAN communication)
MODE SIG [OFF, ICC, ASCD]	×				Indicates the active mode from ICC or ASCD [conventional (fixed speed) cruise control mode]
SET DISP IND [On/Off]	×				Indicates [On/Off] status of SET switch indicator output
DISTANCE [m]	×				Indicates the distance from the vehicle ahead
RELATIVE SPD [m/s]	×				Indicates the relative speed of the vehicle ahead
LDW SYSTEM ON [On/Off]			×		Indicates [On/Off] status of LDW system
LDW ON LAMP [On/Off]			×		Indicates [On/Off] status of LDW system display output
LDP ON IND [On/Off]			×		Indicates [On/Off] status of LDP system display output
LANE DPRT W/L [On/Off]			×		Indicates [On/Off] status of LDW/LDP warning display (Yellow) output
LDW BUZZER OUTPUT [On/Off]			×		Indicates [On/Off] status of warning buzzer output
LDP SYSTEM ON [On/Off]			×		Indicates [On/Off] status of LDP system
WARN REQ [On/Off]			×		Indicates an ADAS control unit judged warning state (ON/OFF) of LDP system
READY signal [On/Off]			×		Indicates LDP system settings
Camera lost [Detect/Deviate/Both]			×	×	Indicates a lane marker detection state judged from a lane marker detection signal read by the ADAS control unit via Chassis communication (Lane camera unit transmits a lane marker signal via Chassis communication)

Monitored item [Unit]	ALL SIG (ICC)	MAIN SIG (ICC)	MAIN SIG (LDW/LDP)	MAIN SIG (BSW/BSI)	Description
Lane unclear [On/Off]			×	×	Indicates an ON/OFF state of the lane marker. The ON/OFF state is judged from a detected lane condition signal read by the ADAS control unit via Chassis communication (The lane camera unit transmits a detected lane condition signal via Chassis communication)
STATUS signal [Stnby/Warn/Cancl/Off]			×		Indicates a control state of LDP system
Shift position [Off, P, R, N, D, M/T1 - 7]			×	×	Indicates shift position read from ADAS control unit through CAN communication (TCM transmits shift position signal through CAN communication)
Turn signal [OFF/LH/RH/LH&RH]			×	×	Indicates turn signal operation status read from ADAS control unit through CAN communication (BCM transmits turn indicator signal through CAN communication)
SIDE G [G]			×	×	Indicates lateral G acting on the vehicle. This lateral G is judged from a side G sensor signal read by ADAS control unit via CAN communication (The ABS actuator and electric unit (control unit) transmits a side G sensor signal via CAN communication)
FUNC ITEM (FCW) [On/Off]	×	×	×	×	Indicates systems which can be set to ON/OFF by selecting “Driver Aids”⇒ “Emergency Assist” of the integral switch Forward Emergency Braking
FUNC ITEM (LDW) [On/Off]	×	×	×	×	Indicates systems which can be set to ON/OFF by selecting “Driver Aids”⇒ “Lane” of the integral switch Lane Departure Warning
FUNC ITEM (BSW) [On/Off]	×	×	×	×	Indicates systems which can be set to ON/OFF by selecting “Driver Aids”⇒ “Blind spot” of the integral switch Blind Spot Warning
LDP SELECT [On/Off]	×	×	×	×	Indicates an ON/OFF state of LDP system. LDP system can be set to ON/OFF by selecting “Driving Aids”⇒“Lane”of the integral switch
LDW SELECT [On/Off]	×	×	×	×	Indicates an ON/OFF state of the LDW system. The LDW system can be set to ON/OFF by selecting “Driving Aids”⇒“Lane” of the integral switch
BSW SELECT [On/Off]	×	×	×	×	Indicates an ON/OFF state of the BSW system. The BSW system can be set to ON/OFF by selecting “Driving Aids”⇒“Blind spot” of the integral switch
BSW/BSI WARN LMP [On/Off]				×	Indicates [On/Off] status of Blind Spot warning malfunction
BSW SYSTEM ON [On/Off]				×	Indicates [On/Off] status of BSW system
FCW SYSTEM ON [On/Off]	×	×			Indicates [On/Off] status of FEB system
BATTERY CIRCUIT OFF [On/Off]					**NOTE:** The item is displayed, but it is not used
LDP WARNING INDICATOR [On/Off]			×		Indicates [On/Off] status of LDP warning display (Yellow) output
LDW ON INDICATOR [On/Off]			×		Indicates [On/Off] status of LDW system ON display output
LDW WARNING INDICATOR [On/Off]			×		Indicates [On/Off] status of LDW system warning display output
SYSTEM CANCEL MESSAGE [NOREQ/SLIP/VDC OFF]	×	×	×	×	Indicates status of system cancel display output

Monitored item [Unit]	ALL SIG (ICC)	MAIN SIG (ICC)	MAIN SIG (LDW/LDP)	MAIN SIG (BSW/BSI)	Description
CAMERA HI TEMP MSG [On/Off]			×	×	Indicates [On/Off] status of lane camera unit high temperature warning display output
ITS SETTING ITEM(LDP) [On/Off]	×	×	×	×	Indicates the presence or absence of LDP system.
BSW ON INDICATOR [On/Off]				×	Indicates [On/Off] status of BSW system ON display output
SIDE RADAR BLOCK COND [On/Off]				×	Indicates [On/Off] status of side radar with dirt or foreign materials
LDW WARNING ALERT TIMING [Nothing/Early/Late]			×		**NOTE:** The item is displayed, but it is not monitored
BSW IND BRIGHTNESS [Nothing/Bright/Normal/Dark]				×	Indicates status of brightness of Blind Spot Warning indicator

ACTIVE TEST

CAUTION:

- **Never perform “Active Test” while driving the vehicle.**
- **The “Active Test” cannot be performed when the following systems malfunction is displayed.**
  - **ICC system**
  - **LDW**
  - **LDP**
  - **Blind Spot Warning**
- **The “Active Test” cannot be performed when the FEB warning lamp is illuminated.**
- **Shift the selector lever to “P” position, and then perform the test.**

Test item	Description
METER LAMP	The MAIN switch indicator and FEB warning lamp can be illuminated by ON/OFF operations as necessary
STOP LAMP	The brake hold drive signal can be operated by ON/OFF operations as necessary, and the stop lamp can be illuminated
ICC BUZZER	Sounds a buzzer used for following systems by arbitrarily operating ON/OFF • Intelligent Cruise Control (ICC) • Forward Emergency Brake (FEB)
BRAKE ACTUATOR	Activates the brake by an arbitrary operation
LDP BUZZER	Sounds a buzzer used for following systems by arbitrarily operating ON/OFF • Lane Departure Warning (LDW) • Lane Departure Prevention (LDP) • Blind Spot Warning (BSW)
WARNING SYSTEM IND	Warning systems ON indicator (on warning systems switch) can be illuminated by ON/OFF operations as necessary
LDP ON IND	The LDP system display can be illuminated by ON/OFF operations as necessary
LANE DEPARTURE W/L	The LDW/LDP warning can be illuminated by ON/OFF operations as necessary
BSW ON INDICATOR	The Blind Spot Warning system display can be illuminated by ON/OFF operations as necessary
LDW ON INDICATOR	The LDW system display can be illuminated by ON/OFF operations as necessary
LDP WARNING INDICATOR	The LDP malfunction can be illuminated by ON/OFF operations as necessary
LDW WARNING INDICATOR	The LDW malfunction can be illuminated by ON/OFF operations as necessary

METER LAMP

NOTE:

The test can be performed only when the engine is running.

Test item	Operation	Description	• MAIN switch indicator • ICC system warning • FEB warning lamp
METER LAMP	Off	Stops sending the following signals to exit from the test • Meter display signal • FEB warning lamp signal	OFF
	On	Transmits the following signals to the combination meter via CAN communication • Meter display signal • FEB warning lamp signal	ON

STOP LAMP

Test item	Operation	Description	Stop lamp
STOP LAMP	Off	Stops transmitting the brake hold drive signal below to end the test	OFF
	On	Transmits the brake hold drive signal	ON

ICC BUZZER

Test item	Operation	Description	Operation sound
ICC BUZZER	MODE1	Transmits the buzzer output signals to the driver assistance buzzer control module via ITS communication	Intermittent beep sound
	Test start	Starts the tests of “MODE1”	—
	Reset	Stops transmitting the buzzer output signal below to end the test	—
	End	Returns to the “SELECT TEST ITEM” screen	—

BRAKE ACTUATOR

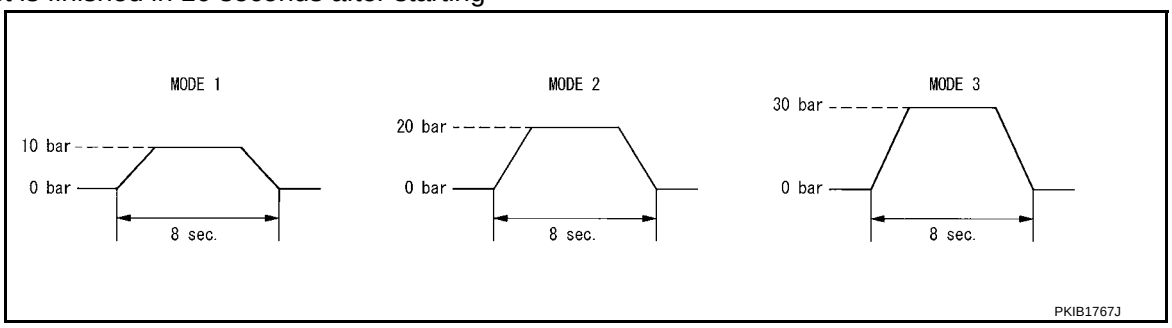
NOTE:

The test can be performed only when the engine is running.

Test item	Operation	Description	“PRESS SENS” value
BRAKE ACTUATOR	MODE1	Transmits the brake fluid pressure control signal to the ABS actuator and electric unit (control unit) via CAN communication	10 bar
	MODE2		20 bar
	MODE3		30 bar
	Test start	Starts the tests of “MODE1”, “MODE2” and “MODE3”	—
	Reset	Stops transmitting the brake fluid pressure control signal below to end the test	—
	End	Returns to the “SELECT TEST ITEM” screen	—

NOTE:

The test is finished in 10 seconds after starting



LDP BUZZER

Test item	Operation	Description	Warning buzzer
LDP BUZZER	Off	Stops transmitting the warning buzzer signal below to end the test	—
	On	Transmits the warning buzzer signal to the warning buzzer	ON

LDP ON IND

Test item	Operation	Description	LDP system display (Green)
LDP ON IND	Off	Stops transmitting the meter display signal below to end the test	—
	On	Transmits the meter display signal to the combination meter via CAN communication	ON

LANE DEPARTURE W/L

Test item	Operation	Description	Lane departure system display (Yellow)
LANE DEPARTURE W/L	Off	Stops transmitting the meter display signal below to end the test	—
	On	Transmits the meter display signal to the combination meter via CAN communication	ON

LDW ON INDICATOR

Test item	Operation	Description	LDW system display (White)
LDW ON INDICATOR	Off	Stops transmitting the meter display signal below to end the test	—
	On	Transmits the meter display signal to the combination meter via CAN communication	ON

LDP WARNING INDICATOR

Test item	Operation	Description	LDP malfunction (Yellow)
LDP WARNING INDICATOR	Off	Stops transmitting the meter display signal below to end the test	—
	On	Transmits the meter display signal to the combination meter via CAN communication	ON

LDW WARNING INDICATOR

Test item	Operation	Description	LDW malfunction (Yellow)
LDW WARNING INDICATOR	Off	Stops transmitting the meter display signal below to end the test	—
	On	Transmits the meter display signal to the combination meter via CAN communication	ON

ECU IDENTIFICATION

Displays ADAS control unit parts number.

DIAGNOSIS SYSTEM (ADAS CONTROL UNIT 2)

CONSULT Function (ICC/ADAS 2)

INFOID:0000000015259634

APPLICATION ITEMS

CONSULT performs the following functions via CAN communication using ADAS control unit 2.

Diagnosis mode	Description
Configuration	• The vehicle specification that is written in ADAS control unit can be displayed or stored • The vehicle specification can be written when ADAS control unit is replaced
Self Diagnostic Result	Displays the name of a malfunctioning system stored in the ADAS control unit
Data Monitor	Displays ADAS control unit input/output data in real time
Active Test	Enables an operational check of a load by transmitting a driving signal from the ADAS control unit to the load
ECU Identification	Displays ADAS control unit part number
CAN Diag Support Monitor	Displays a reception/transmission state of CAN communication and ITS communication

CONFIGURATION

Configuration includes functions as follows.

NOTE:

Models with FEB system only.

Function		Description
Read/Write Configuration	Before Replace ECU	Allows the reading of vehicle specification written in ADAS control unit to store the specification in CONSULT.
	After Replace ECU	Allows the writing of the vehicle information stored in CONSULT into the ADAS control unit.
Manual Configuration		Allows the writing of the vehicle specification into the ADAS control unit by hand.

SELF DIAGNOSTIC RESULT

Refer to DAS-45, "DTC Index".

NOTE:

- The details of time display are as per the following.
- CRNT: A malfunction is detected now
- PAST: A malfunction was detected in the past
- IGN counter is displayed on FFD (Freeze Frame Data).
- 0: The malfunctions that are detected now
  CAN communication system (U1000-01, U1010-49)
- 1 - 39: It increases like 0 → 1 → 2 ··· 38 → 39 after returning to the normal condition whenever the ignition switch OFF → ON. It returns to 0 when a malfunction is detected again in the process.
- If it is over 39, it is fixed to 39 until the self-diagnosis results are erased.
  Other than CAN communication system (Other than U1000-01, U1010-49)
- 1 - 49: It increases like 0 → 1 → 2 ··· 38 → 49 after returning to the normal condition whenever the ignition switch OFF → ON. It returns to 0 when a malfunction is detected again in the process.
- If it is over 49, it is fixed to 49 until the self-diagnosis results are erased.

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.

Monitored item [Unit]	A-TEST I/O SIG	RADAR ICC (MAIN)	RADAR ICC (SUB)	FCW/FEB SIG	CAMERA ICC (ALL)	CAMERA ICC (MAIN)	LDW (MAIN)	BSW (MAIN)	Description
MAIN SW [On/Off]					×	×	×	×	Indicates [On/Off] status as judged from ICC steering switch
SET/COAST SW [On/Off]					×	×			Indicates [On/Off] status as judged from ICC steering switch
CANCEL SW [On/Off]					×	×			Indicates [On/Off] status as judged from ICC steering switch
RESUME/ACC SW [On/Off]					×	×			Indicates [On/Off] status as judged from ICC steering switch
DISTANCE SW [On/Off]					×				Indicates [On/Off] status as judged from ICC steering switch
CRUISE OPE [On/Off]					×	×			Indicates whether controlling or not (ON means “controlling”)
BRAKE SW [On/Off]					×	×	×	×	Indicates [On/Off] status as judged from brake pedal position switch signal (HPCM transmits brake pedal position switch signal through CAN communication)
STOP LAMP SW [On/Off]	×		×		×	×	×	×	Indicates [On/Off] status as judged from stop lamp switch signal (HPCM transmits stop lamp switch signal through CAN communication)
IDLE SW [On/Off]					×				Indicates [On/Off] status of idle switch read from ADAS control unit through CAN communication (HPCM transmits On/Off status through CAN communication)
SET DISTANCE [Short/Mid/Long]					×	×			Indicates set distance memorized in ADAS control unit
CRUISE LAMP [On/Off]			×		×	×			Indicates [On/Off] status of MAIN switch indicator output
OWN VHCL [On/Off]			×		×				**NOTE:** The item is displayed, but it is not monitored
VHCL AHEAD [On/Off]			×		×				Indicates [On/Off] status of vehicle ahead detection indicator output
ICC WARNING [On/Off]			×		×				Indicates [On/Off] status of ICC system warning lamp output
BA WARNING [On/Off]			×		×				Indicates [On/Off] status of FEB indicator lamp output
VHCL SPEED SE [km/h] or [mph]		×	×		×	×	×	×	Indicates vehicle speed calculated from ADAS control unit through CAN communication [ABS actuator and electric unit (control unit) transmits vehicle speed signal (wheel speed) through CAN communication]
SET VHCL SPD [km/h] or [mph]			×		×	×			Indicates set vehicle speed memorized in ADAS control unit
BUZZER O/P [On/Off]	×		×		×				Indicates [On/Off] status of ICC warning chime output
THRTL SENSOR [deg]		×			×	×			**NOTE:** The item is displayed, but it is not monitored

Monitored item [Unit]	A-TEST I/O SIG	RADAR ICC (MAIN)	RADAR ICC (SUB)	FCW/FEB SIG	CAMERA ICC (ALL)	CAMERA ICC (MAIN)	LDW (MAIN)	BSW (MAIN)	Description
ENGINE RPM [rpm]		×			×				Indicates engine speed read from ADAS control unit through CAN communication (HPCM transmits engine speed signal through CAN communication)
WIPER SW [OFF/LOW/HIGH]					×				Indicates wiper [OFF/LOW/HIGH] status (BCM transmits front wiper request signal through CAN communication)
YAW RATE [deg/s]					×				**NOTE:** The item is displayed, but it is not monitored
RELEASE SW NO [On/Off]					×		×	×	**NOTE:** The item is displayed, but it is not monitored
RELEASE SW NC [On/Off]					×		×	×	**NOTE:** The item is displayed, but it is not monitored
STP LMP DRIVE [On/Off]	×		×		×	×			Indicates [On/Off] status of brake hold drive signal
D POSITION SW [On/Off]					×				Indicates [On/Off] status of “D” or “M” positions read from ADAS control unit through CAN communication; ON when position “D” or “M” (TCM transmits shift position signal through CAN communication).
NP RANGE SW [On/Off]			×		×				Indicates shift position signal read from ADAS control unit through CAN communication (TCM transmits shift position signal through CAN communication)
PKB SW [On/Off]					×				Parking brake switch status [On/Off] judged 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)
PWR SUP MONI [V]	×		×		×	×			Indicates IGN voltage input by ADAS control unit
VHCL SPD AT [km/h] or [mph]		×			×				Indicates vehicle speed calculated from CVT vehicle speed sensor read from ADAS control unit through CAN communication (TCM transmits CVT vehicle speed sensor signal through CAN communication)
THRTL OPENING [%]					×	×			Indicates throttle position read from ADAS control unit through CAN communication (HPCM transmits accelerator pedal position signal through CAN communication).
GEAR [1, 2, 3, 4, 5, 6, 7]			×		×				Indicates CVT gear position read from ADAS control unit through CAN communication (TCM transmits current gear position signal through CAN communication)
CLUTCH SW SIG [On/Off]					×	×			**NOTE:** The item is displayed, but it is not monitored
NP SW SIG [On/Off]					×	×			Indicates [On/Off] status as judged from park/neutral position switch signal (HPCM transmits park/neutral position switch signal through CAN communication).

Monitored item [Unit]	A-TEST I/O SIG	RADAR ICC (MAIN)	RADAR ICC (SUB)	FCW/FEB SIG	CAMERA ICC (ALL)	CAMERA ICC (MAIN)	LDW (MAIN)	BSW (MAIN)	Description
MODE SIG [OFF, ICC, ASCD]					×				Indicates the active mode from ICC or ASCD [conventional (fixed speed) cruise control mode]
SET DISP IND [On/Off]			×		×				Indicates [On/Off] status of SET switch indicator output
DISTANCE [m]					×				Indicates the distance from the vehicle ahead
RELATIVE SPD [m/s]					×				Indicates the relative speed of the vehicle ahead
FCW SYSTEM ON [On/Off]					×	×			Indicates [On/Off] status of FCW system
LDW SYSTEM ON [On/Off]							×		Indicates [On/Off] status of LDW system
LDW ON LAMP [On/Off]							×		Indicates [On/Off] status of LDW system display output
LANE DPRT W/L [On/Off]							×		Indicates [On/Off] status of LDW/LDP warning display (Yellow) output
BUZEROUTPUT [On/Off]							×		Indicates [On/Off] status of warning buzzer output
LDP) CAMERA LOST [Detect/Deviate/Both]							×	×	Indicates a lane marker detection state judged from a lane marker detection signal read by the ADAS control unit via ITS communication (Lane camera unit transmits a lane marker signal via ITS communication)
LDP) LANE UNCLEAR [On/Off]							×	×	Indicates an ON/OFF state of the lane marker. The ON/OFF state is judged from a detected lane condition signal read by the ADAS control unit via ITS communication (The lane camera unit transmits a detected lane condition signal via ITS communication)
LDP) SHIFT POSITION [Off, P, R, N, D, M/T1 - 7]							×	×	Indicates shift position read from ADAS control unit through CAN communication (TCM transmits shift position signal through CAN communication)
LDP) TURN SIGNAL [OFF/LH/RH/LH&RH]							×	×	Indicates turn signal operation status read from ADAS control unit through CAN communication (BCM transmits turn indicator signal through CAN communication)
SIDE G [G]							×	×	Indicates lateral G acting on the vehicle. This lateral G is judged from a side G sensor signal read by ADAS control unit via CAN communication (The ABS actuator and electric unit (control unit) transmits a side G sensor signal via CAN communication)
FUNC ITEM (FCW) [On/Off]				×	×	×	×	×	Indicates systems which can be set to ON/OFF by selecting “Driver Aids”⇒“Emergency Assist” of the integral switch Forward Emergency Braking

Monitored item [Unit]	A-TEST I/O SIG	RADAR ICC (MAIN)	RADAR ICC (SUB)	FCW/FEB SIG	CAMERA ICC (ALL)	CAMERA ICC (MAIN)	LDW (MAIN)	BSW (MAIN)	Description
FUNC ITEM (LDW) [On/Off]					×	×	×	×	Indicates systems which can be set to ON/OFF by selecting “Driver Aids”⇒“Lane” of the integral switch Lane Departure Warning
FUNC ITEM (BSW) [On/Off]					×	×	×	×	Indicates systems which can be set to ON/OFF by selecting “Driver Aids”⇒“Blind spot” of the integral switch Blind Spot Warning
FCW SELECT [On/Off]				×	×	×	×	×	Indicates an ON/OFF state of the FCW system. The FCW system can be set to ON/OFF by selecting “Driving Aids”⇒“Emergency brake” of the integral switch
LDW SELECT [On/Off]					×	×	×	×	Indicates an ON/OFF state of the LDW system. The LDW system can be set to ON/OFF by selecting “Driving Aids”⇒“Lane” of the integral switch
BSW SELECT [On/Off]					×	×	×	×	Indicates an ON/OFF state of the BSW system. The BSW system can be set to ON/OFF by selecting “Driving Aids”⇒“Blind spot” of the integral switch
WARN SYS SW [On/Off]				×	×	×	×	×	**NOTE:** The item is displayed, but it is not monitored
BSW WARN LMP [On/Off]								×	Indicates [On/Off] status of Blind Spot warning malfunction
BSW SYSTEM ON [On/Off]								×	Indicates [On/Off] status of BSW system
BSW [On/Off]								×	Indicates [On/Off] status of BSW system
BSW/CTA SW [On/Off]	×							×	**NOTE:** The item is displayed, but it is not monitored
BSW/CTA SW IND [On/Off]	×							×	**NOTE:** The item is displayed, but it is not monitored
BATTERY CIRCUIT OFF [On/Off]									**NOTE:** The item is displayed, but it is not used
LDW ON INDICATOR [On/Off]							×		Indicates [On/Off] status of LDW system ON display output
LDW WARNING INDICATOR [On/Off]							×		Indicates [On/Off] status of LDW system warning display output
SYSTEM CANCEL MESSAGE [NOREQ/SLIP/VDC OFF]			×		×	×			Indicates status of system cancel display output
CAMERA HI TEMP MSG [On/Off]							×		Indicates [On/Off] status of lane camera unit high temperature warning display output
ITS SETTING ITEM(LDP) [On/Off]					×	×			Indicates the presence or absence of LDP system.
BSW ON INDICATOR [On/Off]								×	Indicates [On/Off] status of BSW system ON display output
SIDE RADAR BLOCK COND [On/Off]								×	Indicates [On/Off] status of side radar with dirt or foreign materials
LDW WARNING ALERT TIMING [Nothing/Early/Late]							×		**NOTE:** The item is displayed, but it is not monitored

Monitored item [Unit]	A-TEST I/O SIG	RADAR ICC (MAIN)	RADAR ICC (SUB)	FCW/FEB SIG	CAMERA ICC (ALL)	CAMERA ICC (MAIN)	LDW (MAIN)	BSW (MAIN)	Description
BSW IND BRIGHTNESS [Nothing/Bright/Normal/Dark]								×	Indicates status of brightness of Blind Spot Warning indicator
G SENSOR SIGNAL [On/Off]									**NOTE:** The item is displayed, but it is not monitored
RADAR COMMAND SIGNAL [Normal/Abnormal]		×							**NOTE:** The item is displayed, but it is not monitored
ICC SYSTEM ON [On/Off]		×							**NOTE:** The item is displayed, but it is not monitored
ICC AVAILABLE COND [On/Off]		×							**NOTE:** The item is displayed, but it is not monitored
FEB AVAILABLE COND [On/Off]				×					**NOTE:** The item is displayed, but it is not monitored
FCW AVAILABLE COND [On/Off]				×					**NOTE:** The item is displayed, but it is not monitored
EBA AVAILABLE COND [On/Off]				×					**NOTE:** The item is displayed, but it is not monitored

ACTIVE TEST

Test item	Description
ADAS buzzer 2	Sounds a buzzer used for following systems by arbitrarily operating ON/OFF • Intelligent Cruise Control (ICC) • Forward Emergency Brake (FEB) with pedestrian • Forward Emergency Brake (FEB) • Blind Spot Warning (BSW) • Lane Departure Warning (LDW) • Lane Departure Prevention (LDP)

ADAS buzzer 2

Test item	Operation	Description	Warning buzzer
ADAS buzzer 2	On	Stops transmitting the buzzer output signal below to end the test	ON
	Off	Transmits the warning buzzer signal to the driver assistance warning buzzer	—
	End	Returns to the “SELECT TEST ITEM” screen	—

ECU IDENTIFICATION

Displays ADAS control unit 2 parts number.

DIAGNOSIS SYSTEM (ICC SENSOR)

CONSULT Function (LASER/RADAR)

INFOID:0000000015259636

CAUTION:
After disconnecting the CONSULT vehicle interface (VI) from the data link connector, the ignition must be cycled OFF → ON (for at least 5 seconds) → 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 CCS-80, "DTC Index".

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 communication 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 communication 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 communication]
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
Failsafe unit temperature	**NOTE:** The item is indicated, but not used
Failsafe alignment condition	**NOTE:** The item is indicated, but not used
Failsafe alignment complete	**NOTE:** The item is indicated, but not used
Connector direction	**NOTE:** The item is indicated, but not used
RADAR OFFSET [m]	**NOTE:** The item is indicated, but not used
RADAR HEIGHT [m]	**NOTE:** The item is indicated, but not used

Monitored item [Unit]	Description
L/R ADJUST [deg]	Indicates a horizontal correction value of the radar
U/D ADJUST [deg]	Indicates a vertical correction value of the radar
STEERING ANGLE [deg]	The steering angle is displayed
STRG ANGLE SPEED [deg/s]	The steering angle speed is displayed
Horizontal Alignment value	**NOTE:** The item is indicated, but not used
Vertical Alignment value	**NOTE:** The item is indicated, but not used
Vehicle status for alignment	**NOTE:** The item is indicated, but not used
Alignment status	**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 adjustment direction

ICC sensor Adjust

ECU IDENTIFICATION

ICC sensor part number is displayed.

DIAGNOSIS SYSTEM (LANE CAMERA UNIT)

CONSULT Function (LANE CAMERA)

INFOID:0000000015259635

APPLICATION ITEMS

CONSULT performs the following functions by communicating with the lane camera unit.

Diagnosis mode	Description
Work support	Performs the camera aiming.
Self Diagnostic Result	Displays the name of a malfunctioning system stored in the lane camera unit
Data Monitor	Displays lane camera unit input/output data in real time
Ecu Identification	Displays lane camera unit part number
CAN Diag Support Monitor	Displays a reception/transmission state of chassis communication
Configuration	• The vehicle specification that is written in lane camera unit can be displayed or stored • The vehicle specification can be written when lane camera unit is replaced

WORK SUPPORT

Work support items	Description
AUTO AIM	Outputs camera unit, calculates dislocation of the camera, and displays adjustment direction.
AIM CHECK	**NOTE:** The item is displayed, but it is not used.

SELF DIAGNOSTIC RESULT

Refer to DAS-292, "DTC Index".

FREEZE FRAME DATA (FFD)

Lane camera unit records the following vehicle condition at the time a particular DTC is detected, and displays on CONSULT.

CONSULT screen item (Indication/Unit)	Description
ODO/TRIP METER (km/h)	Vehicle speed of the moment a particular DTC is detected.

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.

Monitored item (Unit)	Description
CAMERA HIGH TEMP (NORMAL/HIGH)	Displays status of lane camera unit high temperature judgment.
WIPER (Off/Lo/Hi)	Displays the wiper operating status.
TURN SIGNAL (Off/LH/ RH/LH&RH)	Displays status of “Turn signal” received from BCM via CAN communication.
VEHICLE SPEED (km/h)	Displays vehicle speed received from ABS actuator and electric unit (control unit) via CAN communication.
DRIVER ASSIST SYSTEM SET (NO REQ)	**NOTE:** The item is indicated, but not monitored.
BRAKE OPERATION STATUS (Off/On/CNFRM/UNKWN)	Displays the brake operating status.
AIMING DONE (not finished/finished)	Displays status that camera aiming is done.

Monitored item (Unit)	Description
AIMING RESULT (NOK/OK)	Displays result of camera aiming.
STEERING ANGLE (deg)	Displays the steering angle sent from the steering angle sensor.
YAW RATE (deg/s)	Displays the yaw rate.
FCTRY AIM YAW (deg)	Displays the yaw angle result of camera aiming.
FCTRY AIM ROL (deg)	Displays the roll angle result of camera aiming.
FCTRY AIM PIT (deg)	Displays the pitch angle result of camera aiming.
LDW FUNCTION (NORMAL/MALF)	Displays LDW function status.
LDW SETTING DISPLAY (NTHNG)	**NOTE:** The item is indicated, but not monitored.
DRIVER ASSIST SYSTEM BZZR (NO REQ)	**NOTE:** The item is indicated, but not monitored.
LDW LEFT (Off/On)	Displays the deviating status on the LH side lane.
LDW RIGHT (Off/On)	Displays the deviating status on the RH side lane.
LDW STATUS DISPLAY (Off/ON/TMP MF/ MF)	**NOTE:** The item is indicated, but not monitored.
HBA FUNCTION	**NOTE:** The item is indicated, but not monitored.
DISTANCE (m)	Displays the distance between the vehicle and an object detected by the lane camera unit.
RELATIVE SPEED (m/s)	Displays the relative velocity to an object detected by the lane camera unit.
HBA REQUEST (NO REQ)	**NOTE:** The item is indicated, but not monitored.
LOW BEAM STATUS (Off)	**NOTE:** The item is indicated, but not monitored.
HIGH BEAM STATUS (Off)	**NOTE:** The item is indicated, but not monitored.
NO-ENTRY SIGN DISPLAY	**NOTE:** The item is indicated, but not monitored.

CONFIGURATION

Configuration includes functions as follows.

Function		Description
Read/Write Configuration	Before Replace ECU	Allows the reading of vehicle specification written in lane camera unit to store the specification in CONSULT.
	After Replace ECU	Allows the writing of the vehicle information stored in CONSULT into the lane camera unit.
Manual Configuration		Allows the writing of the vehicle specification into the lane camera unit by hand.

ECU IDENTIFICATION

Displays lane camera unit parts number.

ECU DIAGNOSIS INFORMATION

ADAS CONTROL UNIT

Reference Value

INFOID:0000000015259641

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 switch ON	When MAIN switch is pressed	On
		When MAIN switch is not pressed	Off
SET/COAST SW	Ignition switch ON	When SET/COAST switch is pressed	On
		When SET/COAST switch is not pressed	Off
CANCEL SW	Ignition switch ON	When CANCEL switch is pressed	On
		When CANCEL switch is not pressed	Off
RESUME/ACC SW	Ignition switch ON	When RESUME/ACCELERATE switch is pressed	On
		When RESUME/ACCELERATE switch is not pressed	Off
DISTANCE SW	Ignition switch ON	When DISTANCE switch is pressed	On
		When DISTANCE switch is not pressed	Off
CRUISE OPE	Drive the vehicle and activate the vehicle-to-vehicle distance control mode	When ICC system is controlling	On
		When ICC system is not controlling	Off
BRAKE SW	Ignition switch ON	When brake pedal is depressed	Off
		When brake pedal is not depressed	On
STOP LAMP SW	Ignition switch ON	When brake pedal is depressed	On
		When brake pedal is not depressed	Off
IDLE SW	Engine running	Idling	On
		Except idling (depress accelerator pedal)	Off
VHCL SPEED SE	While driving		Displays the vehicle speed calculated by ADAS control unit
ENGINE RPM	Engine running		Equivalent to tachometer reading
BA WARNING	Engine running	FEB OFF indicator lamp ON • When FEB system is malfunctioning • When FEB system is turned to OFF	On
		FEB OFF indicator lamp OFF • When FEB system is normal • When FEB system is turned to ON	Off
STP LMP DRIVE	Drive the vehicle and activate the vehicle-to-vehicle distance control mode	When ICC brake hold drive is activated	On
		When ICC brake hold drive is not activated	Off
D RANGE SW	Engine running	When the shift selector is in “D” position or manual mode	On
		When the shift selector is in any position other than “D” or manual mode	Off

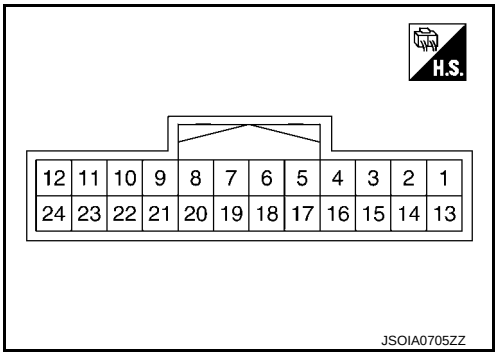
Monitor item	Condition		Value/Status
NP RANGE SW	Engine running	When the shift selector is in “N”, “P” position	On
		When the shift selector is in any position other than “N”, “P”	Off
PKB SW	Ignition switch ON	When the parking brake is applied	On
		When the parking brake is released	Off
PWR SUP MONI	Engine running		Power supply voltage value of ADAS control unit
VHCL SPD AT	While driving		Value of CVT vehicle speed sensor signal
THRTL OPENING	Engine running	Depress accelerator pedal	Displays the throttle position
GEAR	While driving		Displays the gear position
MODE SIG	Start the engine and press MAIN switch	When ICC system is deactivated	Off
		When vehicle-to-vehicle distance control mode is activated	ICC
		When conventional (fixed speed) cruise control mode is activated	ASCD
SET DISP IND	• Drive the vehicle and activate the conventional (fixed speed) cruise control mode • Press SET/COAST switch	SET vehicle speed indicator ON	On
		SET vehicle speed indicator OFF	Off
DISTANCE	Drive the vehicle and activate the vehicle-to-vehicle distance control mode	When a vehicle ahead is detected	Displays the distance from the preceding vehicle
		When a vehicle ahead is not detected	0.0
RELATIVE SPD	Drive the vehicle and activate the vehicle-to-vehicle distance control mode	When a vehicle ahead is detected	Displays the relative speed.
		When a vehicle ahead is not detected	0.0
LDW SYSTEM ON	Ignition switch ON	When the LDW system is ON	On
		When the LDW system is OFF	Off
LDW ON LAMP	Ignition switch ON	When the LDW system is ON	On
		When the LDW system is OFF	Off
LANE DPRT W/L	Drive the vehicle and activate the LDW system or LDP system	Lane departure warning lamp ON	On
		Lane departure warning lamp OFF	Off
LDW BUZER OUTPUT	Drive the vehicle and activate the LDW/LDP system or Blind Spot Warning system	When the buzzer of the following system operates • LDW/LDP system • Blind Spot Warning system	On
		When the buzzer of the following system does not operate • LDW/LDP system • Blind Spot Warning	Off
WARN REQ	Drive the vehicle and activate the LDP system	Lane departure warning is operating	On
		Lane departure warning is not operating	Off
Camera lost	Drive the vehicle and activate the LDW system or LDP system	Both side lane markers are detected	Detect
		Deviate side lane marker is lost	Deviate
		Both side lane markers are lost	Both

Monitor item	Condition		Value/Status
Lane unclear	While driving	Lane marker is unclear	On
		Lane marker is clear	Off
STATUS signal	Drive the vehicle and activate the LDP system	When the LDP system is ON	Stnby
		When the LDP system is operating	Warn
		When the LDP system is canceled	Cancl
		When the LDP system is OFF	Off
Shift position	• Engine running • While driving		Displays the shift position
Turn signal	Turn signal lamps OFF		Off
	Turn signal lamp LH blinking		LH
	Turn signal lamp RH blinking		RH
	Turn signal lamp LH and RH blinking		LH&RH
SIDE G	While driving	Vehicle turning right	Negative value
		Vehicle turning left	Positive value
FUNC ITEM (FCW)	Engine running		On
FUNC ITEM (LDW)	Engine running		On
FUNC ITEM (BSW)	Engine running		On
LDP SELECT	Ignition switch ON	"Lane Departure Prevention" set with the integral switch is ON	On
		"Lane Departure Prevention" set with the integral switch is OFF	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
LDW SELECT	Ignition switch ON	"Lane Departure Warning" set with the integral switch is ON	On
		"Lane Departure Warning" 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
BSW/BSI 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
		When the BSW system is OFF	Off
FCW SYSTEM ON	Engine running	When the FEB system is ON	On
		When the FEB system is OFF	Off
BATTERY CIRCUIT OFF	**NOTE:** The item is indicated, but not used		Off
LDP WARNING INDICATOR	Engine running	When the LDP system is malfunctioning	On
		When the LDP system is normal	Off
LDW ON INDICATOR	Engine running	LDW system display ON	On
		LDW system display OFF	Off
LDW WARNING INDICATOR	Engine running	When the LDW system is malfunctioning	On
		When the LDW system is normal	Off

Monitor item	Condition		Value/Status
SYSTEM CANCEL MESSAGE	Engine running	When the vehicle is normal	NOREQ
		When the wheel is slipping	SLIP
		When the VDC is OFF	VDC OFF
CAMERA HI TEMP MSG	Engine running	Lane camera unit high temperature warning display ON	On
		Lane camera unit high temperature warning display OFF	Off
ITS SETTING ITEM(LDP)	Ignition switch ON		On
BSW ON INDICATOR	Engine running	BSW system display ON	On
		BSW system display OFF	Off
SIDE RADAR BLOCK COND	Engine running	Front bumper or side radar is dirty	On
		Front bumper and side radar is clean	Off
LDW WARNING ALERT TIMING	Ignition switch ON	LDW system OFF	Nothing
		Lane departure warning timing is early setting	Early
		Lane departure warning timing is late setting	Late
BSW IND BRIGHT-NESS	Ignition switch ON	BSW system OFF	Nothing
		Blind Spot Warning indicator brightness bright	Bright
		Blind Spot Warning indicator brightness normal	Normal
		Blind Spot Warning indicator brightness dark	Dark

TERMINAL LAYOUT

PHYSICAL VALUES



Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	−	Signal name	Input/ Output			
1 (L)	Ground	CAN high	—	—	—	—
2 (R)		CAN low	—	—	—	—
5 (B)		Ground	—	Ignition switch ON	—	0 V
6 (L)		ITS communication high	—	—	—	—
7 (Y)		ITS communication low	—	—	—	—
8 (L)		Chassis communication high	—	—	—	—
9 (W)		Chassis communication low	—	—	—	—
12 (P)		Ignition power supply	Input	Ignition switch ON		Battery voltage
18 (W)		Warning system switch (with FEB)	Input	Ignition switch ON	When warning system switch is not pressed	Battery voltage
					When warning system switch is pressed	0 V
19 (BR)		Warning system ON indicator (with FEB)	Output	Ignition switch ON	Warning system ON indicator ON	0 V
					Warning system ON indicator OFF	Battery voltage

Fail-safe (ADAS Control Unit)

INFOID:0000000015259642

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 display	Description
Vehicle-to-vehicle distance control mode	High-pitched tone	ICC system warning	Cancel
Conventional (fixed speed) cruise control mode	High-pitched tone	ICC system warning	Cancel
Forward Emergency Braking (FEB)	High-pitched tone	FEB warning	Cancel

DTC Inspection Priority Chart

INFOID:0000000015259643

If multiple DTCs are detected simultaneously, check them one by one depending on the following DTC inspection priority chart.

Priority	Detected items (DTC)	
1	• C1A0A: CONFIG UNFINISHED • U1000: CAN COMM CIRCUIT • U1010: CONTROL UNIT (CAN)	
2	• C1A01: POWER SUPPLY CIR • C1A02: POWER SUPPLY CIR 2 • C1A04: ABS/TCS/VDC CIRC • C1A05: BRAKE SW/STOP L SW • C1A06: OPERATION SW CIRC • C1A07: CVT • C1A1A: HPCM CIRCUIT • C1A13: STOP LAMP RLY FIX • C1A14: ECM CIRCUIT • C1A24: NP RANGE • C1A25: SHIFT RANGE IND • C1A26: ECD MODE MALF • C1A33: CAN TRANSMISSION ERR • C1A34: COMMAND ERROR • C1A39: STRG SEN CIR • C1A40: SYSTEM SW CIR • C1B00: CAMERA UNIT MALF • C1B01: CAM AIMING INCMP • C1B03: CAM ABNRMAL TMP DETCT • C1B53: SIDE RDR R MALF • C1B54: SIDE RDR L MALF • C1B59: CCM • C1B82: DIST SEN OFF-CENTER • C1B83: DIST SEN BLOCKED • C1B84: DIST SEN MALFUNCTION • C1B85: DIST SEN ABNORMAL TEMP • C1B86: DIST SEN PWR SUP CIR • C1B5D: FEB OPE COUNT LIMIT • C1B5A: G SENSOR MALF	• U0121: VDC CAN CIR 2 • U0126: STRG SEN CAN CIR 1 • U0235: ICC SENSOR CAN CIRC 1 • U0155: MET CAN CIRC 1 • U0401: ECM CAN CIR 1 • U0402: TCM CAN CIR 1 • U0415: VDC CAN CIR 1 • U0428: STRG SEN CAN CIR 2 • U1500: CAM CAN CIR 2 • U1501: CAM CAN CIR 1 • U1502: ICC SEN CAN COMM CIR • 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 • U1507: LOST COMM (SIDE RDR R) • U1508: LOST COMM (SIDE RDR L) • U150B: ECM CAN CIRC 3 • U150C: VDC CAN CIRC 3 • U150D: TCM CAN CIRC 3 • U150E: BCM CAN CIRC 3 • U151D: HPCM CAN CIRCUIT 2 • U151E: HPCM CAN CIRCUIT 1 • U1513: METER CAN CIRC 3 • U1514: STRG SEN CAN CIRC 3 • U1515: ICC SENSOR CAN CIRC 3 • U1516: CAM CAN CIR 3 • U1518: SIDE RDR L CAN CIRC 3 • U1519: SIDE RDR R CAN CIRC 3
3	• C1A03: VHCL SPEED SE CIRC	
4	• C1A00: CONTROL UNIT	

DTC Index

INFOID:0000000015259644

Systems for fail-safe
- A: Forward Emergency Braking (FEB)
- B: Blind Spot Warning (BSW)/Rear Cross Traffic Alert (RCTA)
- C: Lane Departure Warning (LDW)/Lane Departure Prevention (LDP)
- D: Forward Emergency Braking (FEB) with pedestrian
- E: Vehicle-to-vehicle distance control mode
- F: Conventional (fixed speed) cruise control mode

DTC	CONSULT display	Fail-safe	Reference
CONSULT		System	
NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED	NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED	—	—
C1A0A	CONFIG UNFINISHED	A, B, C, D, E, F	DAS-67
C1A00	CONTROL UNIT	A, B, C, D, E, F	DAS-68
C1A01	POWER SUPPLY CIR	A, B, C, D, E, F	DAS-70
C1A02	POWER SUPPLY CIR 2	A, B, C, D	DAS-70
C1A03	VHCL SPEED SE CIRC	A, B, C, D	DAS-72
C1A04	ABS/TCS/VDC CIRC	A, B, C, D	DAS-76
C1A05	BRAKE SW/STOP L SW	A, B, C	DAS-79

Systems for fail-safe
- A: Forward Emergency Braking (FEB)
- B: Blind Spot Warning (BSW)/Rear Cross Traffic Alert (RCTA)
- C: Lane Departure Warning (LDW)/Lane Departure Prevention (LDP)
- D: Forward Emergency Braking (FEB) with pedestrian
- E: Vehicle-to-vehicle distance control mode
- F: Conventional (fixed speed) cruise control mode

DTC	CONSULT display	Fail-safe	Reference
CONSULT		System	
C1A06	OPERATION SW CIRC	A, B	DAS-82
C1A07	CVT CIRCUIT	A, B, C, D	DAS-85
C1A1A	HPCM CIRCUIT	A, B, C, D, E, F	DAS-87
C1A13	STOP_LAMP_RLY_FIX	A, B, C	DAS-90
C1A14	ECM CIRCUIT	A, B, C	DAS-93
C1A24	NP RANGE	A, B, C	DAS-95
C1A25	SHIFT RANGE IND	A, B, C	DAS-97
C1A26	ECD MODE MALF	A, B, C	DAS-99
C1A33	CAN TRANSMISSION ERR	A, B, C, D	DAS-101
C1A34	COMMAND ERROR	A, B, C, D	DAS-103
C1A39	STRG SEN CIR	A, B, C	DAS-104
C1A40	SYSTEM SW CIR	A, B, C	DAS-107
C1B00	CAMERA UNIT MALF	A, B	DAS-109
C1B01	CAM AIMING INCMP	A, B	DAS-111
C1B03	ABNRML TMP DETCT	A, B	DAS-113
C1B53	SIDE RDR R MALF	B	DAS-115
C1B54	SIDE RDR L MALF	B	DAS-117
C1B59	CCM	A, B, C, D	DAS-119
C1B82	DIST SEN OFF CENTER	A, C	DAS-121
C1B83	DIST SEN BLOCKED	A, C	DAS-122
C1B84	DIST SEN MALFUNCTION	A, C	DAS-123
C1B85	DIST SEN ABNORMAL TEMP	A, C	DAS-124
C1B86	DIST SEN PWR SUP CIR	A, C	DAS-125
C1B5A	G SENSOR MALF	A, B, C	DAS-127
C1B5D	FEB OPE COUNT LIMIT	A, B, C	DAS-129
U0121	VDC CAN CIR 2	A, B, C	DAS-130
U0126	STRG SEN CAN CIR 1	A, B, C	DAS-133
U0155	MET CAN CIR 1	A, B, C	DAS-136
U0235	ICC SENSOR CAN CIRC 1	A, C	DAS-138
U0401	ECM CAN CIR 1	A, B, C	DAS-140
U0402	TCM CAN CIR 1	A, B, C	DAS-142
U0415	VDC CAN CIR 1	A, B	DAS-144
U0428	STRG SEN CAN CIR 2	A, C	DAS-147
U1000[NOTE]	CAN COMM CIRCUIT	A, B	DAS-150
U1010	CONTROL UNIT (CAN)	A, B	DAS-153
U150B	ECM CAN CIRC 3	A, B	DAS-155
U150C	VDC CAN CIRC 3	A, B	DAS-157
U150D	TCM CAN CIRC 3	A, B	DAS-159

Systems for fail-safe
- A: Forward Emergency Braking (FEB)
- B: Blind Spot Warning (BSW)/Rear Cross Traffic Alert (RCTA)
- C: Lane Departure Warning (LDW)/Lane Departure Prevention (LDP)
- D: Forward Emergency Braking (FEB) with pedestrian
- E: Vehicle-to-vehicle distance control mode
- F: Conventional (fixed speed) cruise control mode

DTC	CONSULT display	Fail-safe	Reference
CONSULT		System	
U150E	BCM CAN CIRC 3	A, B	DAS-161
U1500	CAM CAN CIR2	B, C	DAS-172
U1501	CAM CAN CIR 1	B, C	DAS-175
U1502	ICC SEN CAN COMM CIR	A	DAS-178
U1503	SIDE RDR L CAN CIR 2	B	DAS-179
U1504	SIDE RDR L CAN CIR 1	B	DAS-182
U1505	SIDE RDR R CAN CIR 2	B	DAS-185
U1506	SIDE RDR R CAN CIR 1	B	DAS-188
U1507	LOST COMM (SIDE RDR R)	B	DAS-191
U1508	LOST COMM (SIDE RDR L)	B	DAS-194
U151D	HPCM CAN CIRCUIT 2	A, B, C, D, E, F	DAS-163
U151E	HPCM CAN CIRCUIT 1	A, B, C, D, E, F	DAS-166
U1513	METER CAN CIRC 3	A, B, C	DAS-197
U1514	STRG SEN CAN CIRC 3	A, B, C	DAS-199
U1515	ICC SENSOR CAN CIRC 3	A	DAS-201
U1516	CAM CAN CIRC 3	B, C	DAS-202
U1518	SIDE RDR L CAN CIRC 3	B	DAS-204
U1519	SIDE RDR R CAN CIRC 3	B	DAS-206

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.

ADAS CONTROL UNIT 2

Reference Value

INFOID:0000000015259645

VALUES ON THE DIAGNOSIS TOOL

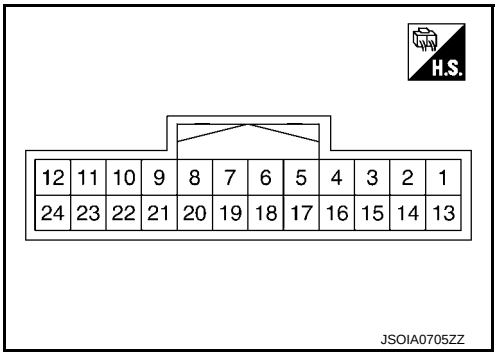
NOTE:
The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

Monitor item	Condition		Value/Status
BRAKE SW	Ignition switch ON	When brake or clutch pedal is depressed.	Off
		When brake or clutch pedal is not depressed.	On
STOP LAMP SW	Ignition switch ON	When brake pedal is depressed.	On
		When brake pedal is not depressed.	Off
IDLE SW	Engine running	Idling	On
		Except idling (depress accelerator pedal)	Off
VHCL SPEED SE	While driving		Displays the vehicle speed calculated by ADAS control unit
SET VHCL SPD	While driving	When vehicle speed is set.	Displays the set vehicle speed
BUZZER O/P	Engine running	When the buzzer of the following system operates: • FCW system • FEB system	On
		When the buzzer of the following system not operates: • FCW system • FEB system	Off
ENGINE RPM	Engine running		Equivalent to tachometer reading
WIPER SW	Ignition switch ON	Wiper not operating.	Off
		Wiper LO operation.	Low
		Wiper HI operation.	High
BA WARNING	Engine running	FEB OFF indicator lamp ON. • When FEB system is malfunctioning. • When FEB system is turned to OFF.	On
		FEB OFF indicator lamp OFF. • When FEB system is normal. • When FEB system is turned to ON.	Off
D POSITION SW	Engine running	When the selector lever is in “D” position or manual mode.	On
		When the selector lever is in any position other than “D” or manual mode.	Off
NP RANGE SW	Engine running	When the selector lever is in “N”, “P” position.	On
		When the selector lever is in any position other than “N”, “P”.	Off
PKB SW	Ignition switch ON	When the parking brake is applied.	On
		When the parking brake is released.	Off
PWR SUP MONI	Engine running		Power supply voltage value of ADAS control unit

Monitor item	Condition		Value/Status
VHCL SPD AT	While driving		Value of CVT vehicle speed sensor signal
THRTL OPENING	Engine running	Depress accelerator pedal.	Displays the throttle position
GEAR	While driving		Displays the gear position
NP SW SIG	Ignition switch ON	When the shift lever is in neutral position.	On
		When the shift lever is in any position other than neutral.	Off
SET DISP IND	Press SET/COAST switch	SET switch indicator ON.	On
		SET switch indicator OFF.	Off
DISTANCE	Drive the vehicle and activate the FCW/FEB system	When a vehicle ahead is detected.	Displays the distance from the preceding vehicle
		When a vehicle ahead is not detected.	0.0
RELATIVE SPD	Drive the vehicle and activate the FCW/FEB system	When a vehicle ahead is detected.	Displays the relative speed.
		When a vehicle ahead is not detected.	0.0
SIDE G	While driving	Vehicle turning right.	Negative value
		Vehicle turning left.	Positive value
FUNC ITEM (FCW)	Engine running		On
FUNC ITEM (BSW)	Engine running		On
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
BSWBSI 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
		When the BSW system is OFF.	Off
FCW SYSTEM ON	Engine running	When the FEB system is ON.	On
		When the FEB system is OFF.	Off
BSW ON INDICATOR	Engine running	BSW system display ON.	On
		BSW system display OFF.	Off
SIDE RADAR BLOCK COND	Engine running	Rear bumper or side radar is dirty.	On
		Rear bumper or side radar is clean.	Off
BSW IND BRIGHTNESS	Ignition switch ON	BSW system OFF.	Nothing
		Blind Spot Warning indicator brightness bright.	Bright
		Blind Spot Warning indicator brightness normal.	Normal
		Blind Spot Warning indicator brightness dark.	Dark
FEB AVAILABLE COND	Engine running	When the FEB system is available condition.	On
		When the FEB system is not available condition.	Off
EBA AVAILABLE COND	Engine running	When the Brake Assist system is available condition.	On
		When the Brake Assist system is not available condition.	Off

TERMINAL LAYOUT

PHYSICAL VALUES



Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
1 (BR)	Ground	Ground	Input	—		0 V
2 (L)		ITS communication high	—	—		—
3 (P)		Ignition power supply	Input	Ignition switch ON		Battery voltage
5 (Y)		ITS communication low	—	—		—
6 (Y)		CAN low	—	—		—
9 (L)		CAN high	—	—		—
10 (R)		CAN low	—	—		—
11 (W)		Warning system switch (without FEB)	Input	Ignition switch ON	Warning system switch is not pressed	Battery voltage
					Warning system switch is pressed	0 V
12 (GR)		Warning buzzer signal	Output	Ignition switch ON	Warning buzzer operation	Battery voltage
					Warning buzzer not operating	0 V
17 (BR)		Warning system switch ON indicator (without FEB)	Output	Ignition switch ON	Warning system ON indicator is OFF	Battery voltage
					Warning system ON indicator is ON	0 V
18 (L)		CAN high	—	—		—
24 (B)		Warning buzzer ground	—	—	—	—

Fail-safe (ADAS Control Unit 2)

INFOID:0000000015259646

If a malfunction occurs in each system, ADAS control unit 2 cancels each control, sounds a beep, and turns ON the warning or indicator lamp.

System	Buzzer	Warning lamp/Warning display	Description
Lane Departure Warning (LDW)	—	Warning systems indicator (Lane position: Yellow)	Cancel
Lane Departure Prevention (LDP)	Low-pitched tone	Warning systems indicator (Lane position: Yellow)	Cancel
Blind Spot Warning (BSW)	—	Blind Spot Warning warning lamp	Cancel
Rear Cross Traffic Alert (RCTA)	—	Rear Cross Traffic Alert warning	Cancel

DTC Inspection Priority Chart

INFOID:0000000015259647

If multiple DTCs are detected simultaneously, check them one by one depending on the following DTC inspection priority chart.

Priority	Detected items (DTC)	
1	• U1000: CAN COMM CIRCUIT • U1010: CONTROL UNIT (CAN) • U1321: CONFIG UNFINISHED	
2	• C1A01: POWER SUPPLY CIR • C1A02: POWER SUPPLY CIR 2 • C1A04: ABS/TCS/VDC CIRC • C1A05: BRAKE SW/STOP L SW • C1A07: CVT • C1A1A: HPCM CIRCUIT • C1A39: STRG SEN CIR • C1B00: CAMERA UNIT MALF • C1B01: CAM AIMING INCMP • C1B03: CAM ABNRMAL TMP DETCT • C1B53: SIDE RDR R MALF • C1B54: SIDE RDR L MALF	• U0121: VDC CAN CIR 2 • U0126: STRG SEN CAN CIR 1 • U0415: VDC CAN CIR 1 • U0428: STRG SEN CAN CIR 2 • U1402: CVT CAN CIR2 • U1500: CAM CAN CIR 2 • U1501: CAM CAN CIR 1 • 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 • U1507: LOST COMM (SIDE RDR R) • U1508: LOST COMM (SIDE RDR L) • U151D: HPCM CAN CIRCUIT 2 • U151E: HPCM CAN CIRCUIT 1
3	• C1A03: VHCL SPEED SE CIRC	
4	• C1A00: CONTROL UNIT	

DTC Index

INFOID:0000000015259648

NOTE:
- The details of time display are as per the following.
- CRNT: A malfunction is detected now
- PAST: A malfunction was detected in the past
- IGN counter is displayed in FFD (Freeze Frame Data).
- 0: The malfunctions that are detected now
- 1 - 39: It increases like 0 → 1 → 2 ··· 38 → 39 after returning to the normal condition whenever the ignition switch OFF → ON. It returns to 0 when a malfunction is detected again in the process.
- If it is over 39, it is fixed to 39 until the self-diagnosis results are erased.

DTC CONSULT	CONSULT display	Reference
NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED	NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED	—
C1A00	CONTROL UNIT	DAS-68
C1A01	POWER SUPPLY CIR	DAS-71
C1A02	POWER SUPPLY CIR 2	DAS-71
C1A03	VHCL SPEED SE CIRC	DAS-73

DTC CONSULT	CONSULT display	Reference
C1A04	ABS/TCS/VDC CIRC	DAS-77
C1A05	BRAKE SW/STOP L SW	DAS-80
C1A07	CVT CIRCUIT	DAS-86
C1A1A	HPCM CIRCUIT	DAS-71
C1A39	STRG SEN CIR	DAS-105
C1B00	CAMERA UNIT MALF	DAS-109
C1B01	CAM AIMING INCMP	DAS-112
C1B03	ABNRML TMP DETCT	DAS-114
C1B53	SIDE RDR R MALF	DAS-115
C1B54	SIDE RDR L MALF	DAS-117
U0121	VDC CAN CIR 2	DAS-131
U0126	STRG SEN CAN CIR 1	DAS-134
U0415	VDC CAN CIR 1	DAS-145
U0428	STRG SEN CAN CIR 2	DAS-148
U1000[NOTE]	CAN COMM CIRCUIT	DAS-151
U1010	CONTROL UNIT (CAN)	DAS-154
U1321	CONFIG UNFINISHED	DAS-169
U1402	CVT CAN CIRC 1	DAS-170
U1500	CAM CAN CIR2	DAS-173
U1501	CAM CAN CIR 1	DAS-176
U1503	SIDE RDR L CAN CIR 2	DAS-180
U1504	SIDE RDR L CAN CIR 1	DAS-183
U1505	SIDE RDR R CAN CIR 2	DAS-186
U1506	SIDE RDR R CAN CIR 1	DAS-189
U1507	LOST COMM (SIDE RDR R)	DAS-191
U1508	LOST COMM (SIDE RDR L)	DAS-194
U151D	HPCM CAN CIRCUIT 2	DAS-194
U151E	HPCM CAN CIRCUIT 1	DAS-194

ICC SENSOR

Reference Value

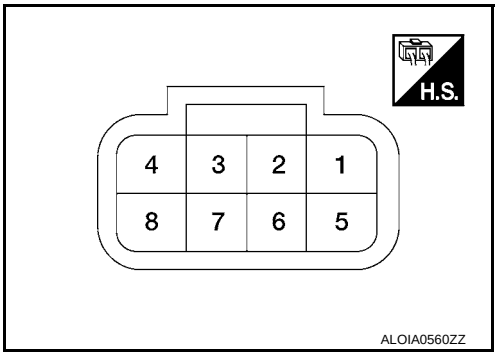
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VALUES ON THE DIAGNOSIS TOOL

Monitor item	Condition		Value/Status
VHCL SPEED SE	While driving		Value of vehicle speed signal (wheel speed)
YAW RATE	While driving	Vehicle stopped	0.0
		Vehicle turning right	Positive value
		Vehicle turning left	Negative value
PWR SUP MONI	Ignition switch ON		Power supply voltage value of ICC sensor
DISTANCE	Drive the vehicle and activate the vehicle-to-vehicle distance control mode	When a vehicle ahead is detected	Displays the distance from the preceding vehicle
		When a vehicle ahead is not detected	0.0
RELATIVE SPD	Drive the vehicle and activate the vehicle-to-vehicle distance control mode	When a vehicle ahead is detected	Displays the relative speed
		When a vehicle ahead is not detected	0.0
Failsafe unit temperature	**NOTE:** The item is indicated, but not used		—
Failsafe condition	**NOTE:** The item is indicated, but not used		—
Failsafe alignment complete	**NOTE:** The item is indicated, but not used		—
Connector direction	**NOTE:** The item is indicated, but not used		—
RADAR OFFSET	**NOTE:** The item is indicated, but not used		—
RADAR HEIGHT	**NOTE:** The item is indicated, but not used		—
L/R ADJUST	Ignition switch ON	At the completion of radar alignment adjustment	Horizontal correction value is displayed
U/D ADJUST	Ignition switch ON	At the completion of radar alignment adjustment	Vertical correction value is displayed
STEERING ANGLE	Ignition switch ON	When setting the steering wheel in straight-ahead position	0.0
		When turning the steering wheel 90° rightward	+90
		When turning the steering wheel 90° leftward	-90
STRG ANGLE SPEED	Ignition switch ON	At the time of turning the steering wheel	Steering wheel turning speed is displayed
Horizontal Alignment value			Displays the radar horizontal angle

Monitor item	Condition	Value/Status
Vertical Alignment value	**NOTE:** The item is indicated, but not used	—
Vehicle status for Alignment	**NOTE:** The item is indicated, but not used	—

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition	Standard value	Reference value (Approx.)
+	–	Signal name	Input/ Output			
1 (B)	Ground	Ground	—	Ignition switch ON	0 - 0.1 V	0 V
2 (R)	—	ITS communication-L	—	—	—	—
3 (L)		ITS communication-H	—	—	—	—
8 (SB)	1 (B)	Ignition power supply	Input	Ignition switch ON	9.5 - 16 V	Battery voltage

Fail-safe (ICC Sensor)

INFOID:0000000015259638

If a malfunction occurs in the ICC sensor, ADAS control unit cancels control, sounds a beep, and turns ON the ICC system warning lamp in the combination meter.

DTC Inspection Priority Chart

INFOID:0000000015259639

If multiple DTCs are detected simultaneously, check them one by one depending on the following DTC inspection priority chart.

Priority	Detected items (DTC)
1	• U1000: CAN COMM CIRCUIT • U1010: CONTROL UNIT (CAN)
2	• C1A50: ADAS MALFUNCTION

Priority	Detected items (DTC)
3	• C1A01: POWER SUPPLY CIR • C1A02: POWER SUPPLY CIR 2 • C1A03: VHCL SPEED CIRC • C1A04: ABS/TCS/VDC CIRC • C1A05: BRAKE SW/STOP L SW • C1A06: OPERATION SW • C1A14: ECM CIRCUIT • C1A15: GEAR POSITION • C1A23: UNIT LOW TEMP • C1A24: NP RANGE • C1A26: ECD MODE MALF • C1A27: ECD PWR SUPLY CIR • C1A33: CAN TRANSMISSION ERR • C1A34: COMMAND ERROR • C1A35: APA CIR • C1A39: STRG SEN CIR • C1B58: DR ASSIST BUZZER CIRCUIT • C1B83: DIST SEN BLOCKED • C1F01: APA MOTOR MALF • C1F02: APA C/U MALF • C1F05: APA PWR SUPLY CIR • U0104: ADAS CAN CIR1 • U0121: VDC CAN CIR2 • U0126: STRG SEN CAN CIR1 • U0235: ICC SENSOR CAN CIR1 • U0401: ECM CAN CIR2 • U0402: TCM CAN CIR2 • U0415: VDC CAN CIR1 • U150B: ECM CAN CIR3 • U150C: VDC CAN CIRC3 • U150D: TCM CAN CIRC3 • U150E:BCM CAN CIRC3 • U1513: METER CAN CIRC3 • U1514: STRG SEN CAN CIRC3 • U1515: ICC SENSOR CAN CIRC3
4	• C1A00: CONTROL UNIT

DTC Index

INFOID:0000000015259640

NOTE:

- The details of time display are as per the following.
- 0: The malfunctions that are detected now
  CAN communication system (U1000, U1010)
- 1 - 39: It increases like 0 → 1 → 2 ··· 38 → 39 after returning to the normal condition whenever the ignition switch OFF → ON. It returns to 0 when a malfunction is detected again in the process.
- If it is over 39, it is fixed to 39 until the self-diagnosis results are erased.
  Other than CAN communication system (Other than U1000, U1010)
- 1 - 49: It increases like 0 → 1 → 2 ··· 38 → 49 after returning to the normal condition whenever the ignition switch OFF → ON. It returns to 0 when a malfunction is detected again in the process.
- If it is over 49, it is fixed to 49 until the self-diagnosis results are erased.

×: Applicable

DTC	CONSULT display	ICC system warning lamp	Fail-safe function				Reference
CONSULT			Vehicle-to-vehicle distance control mode	Conventional (fixed speed) cruise control mode	Forward Collision Warning (FCW)	Forward Emergency Braking (FEB)	
C1A00	CONTROL UNIT	ON	×	×	×	×	CCS-110, "ICC SENSOR : DTC Logic"
C1A01	POWER SUPPLY CIR	ON	×	×	×	×	CCS-113, "ICC SENSOR : DTC Logic"
C1A02	POWER SUPPLY CIR2	ON	×	×	×	×	CCS-113, "ICC SENSOR : DTC Logic"
C1A03	VHCL_SPEED SE CIRC	ON	×	×	×	×	CCS-115, "ADAS CONTROL UNIT : DTC Description"
C1A04	ABS/TCS/VDC_CIRC	ON	×	×	×	×	CCS-119, "ADAS CONTROL UNIT : DTC Description"
C1A05	BRAKE_SW/STOP_L_SW	ON	×	×	×	×	CCS-122, "ADAS CONTROL UNIT : DTC Description"
C1A06	OPERATION_SW_CIRC	ON	×	×	×	×	CCS-125, "DTC Logic"
C1A07	CVT MSG CIRCUIT	ON	×	×	×	×	CCS-128, "DTC Logic"
C1A14	ECM_CIRCUIT	ON	×	×	×	×	CCS-129, "DTC Description"
C1A15	GEAR_POSITION	ON	×	×	×	×	CCS-131, "Description"
C1A23	UNIT HIGH TEMP	ON	×	×	×	×	CCS-133, "DTC Logic"
C1A24	NP_RANGE	ON	×	×	×	×	CCS-134, "DTC Description"
C1A26	ECD_MODE_MALF	ON	×	×	×	×	CCS-136, "DTC Description"
C1A27	ECD_PWR_SUPLY_CIR	ON	×	×	×	×	CCS-138, "DTC Logic"

DTC	CONSULT display	ICC system warning lamp	Fail-safe function				Reference
CONSULT			Vehicle-to-vehicle distance control mode	Conventional (fixed speed) cruise control mode	Forward Collision Warning (FCW)	Forward Emergency Braking (FEB)	
C1A33	CAN TRANSMISSION ERROR	ON	×	×	×	×	CCS-140, "DTC Description"
C1A34	COMMAND ERROR	ON	×	×	×	×	CCS-142, "DTC Description"
C1A39	STRG SEN CIR	ON	×	×	×	×	CCS-145, "ICC SENSOR : DTC Logic"
C1B82	DISTANCE SENSOR OFF-CENTER	ON	×	×	×	×	CCS-186, "DTC Logic"
C1B83	DISTANCE SENSOR BLOCKED	ON	×	×	×	×	CCS-186, "DTC Logic"
C1B58	DR ASSIST BUZZER CIRCUIT	ON	×	×	×	×	CCS-186, "DTC Logic"
C1B83	DIST SEN BLOCKED	ON	×	×	×	×	CCS-147, "DTC Logic"
U0121	VDC CAN CIR2	ON	×	×	×	×	CCS-150, "ICC SENSOR : DTC Logic"
U0126	STRG SEN CAN CIR1	ON	×	×	×	×	CCS-154, "ICC SENSOR : DTC Logic"
U0235	ICC SENSOR CAN CIR1	ON	×	×	×	×	CCS-155, "DTC Logic"
U0401	ECM CAN CIR1	ON	×	×	×	×	CCS-156, "DTC Description"
U0402	TCM CAN CIRC1	ON	×	×	×	×	CCS-158, "DTC Description"
U0415	VDC CAN CIR1	ON	×	×	×	×	CCS-162, "ICC SENSOR : DTC Logic"
U0428	STRG SEN CAN CIR2	ON	×	×	×	×	CCS-165, "ICC SENSOR : DTC Logic"
U1000	CAN COMM CIRCUIT	ON	×	×	×	×	CCS-169, "ICC SENSOR : DTC Logic"
U1010	CONTROL UNIT (CAN)	ON	×	×	×	×	CCS-172, "ICC SENSOR : DTC Logic"

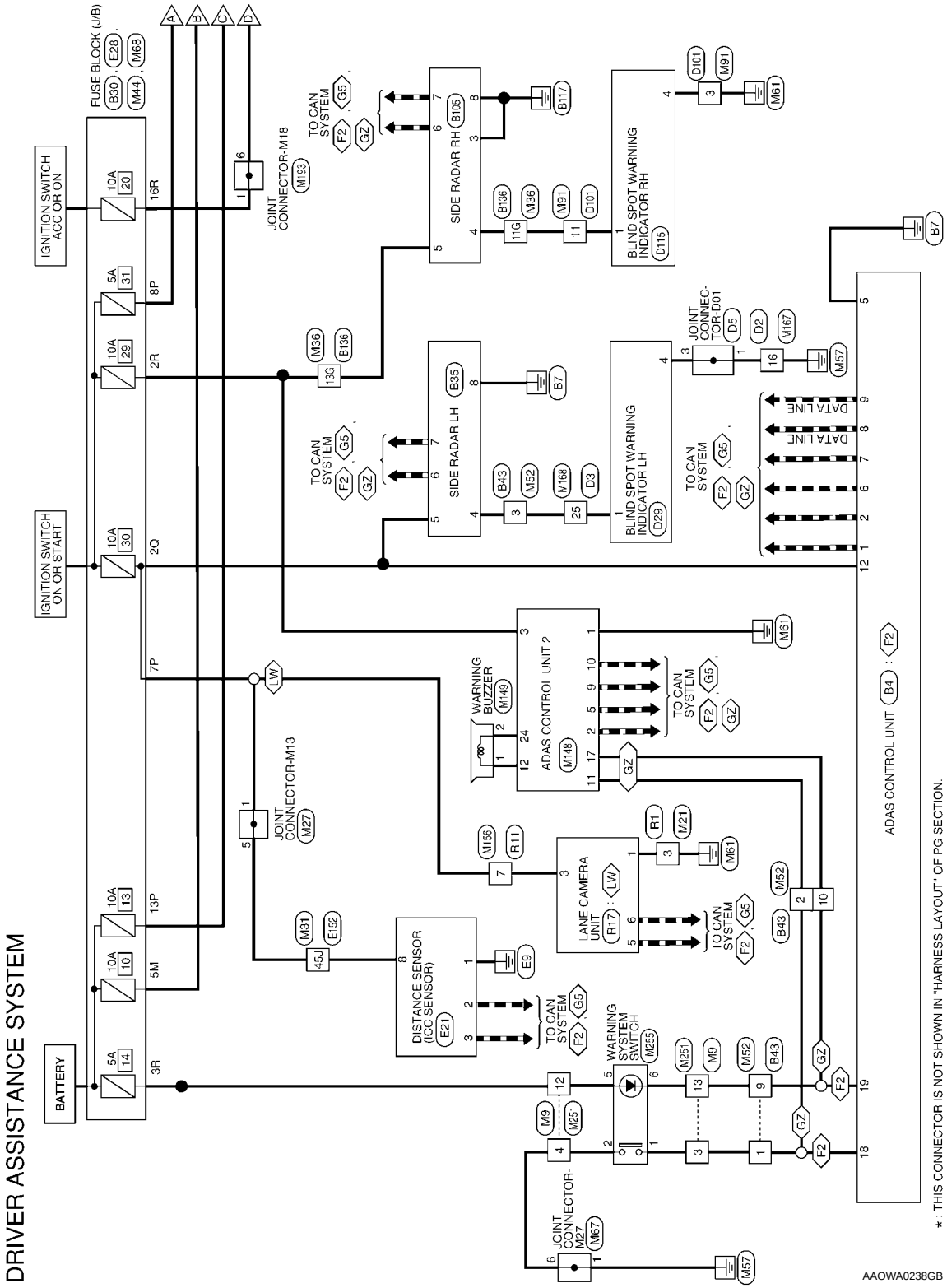
DTC	CONSULT display	ICC system warning lamp	Fail-safe function				Reference
CONSULT			Vehicle-to-vehicle distance control mode	Conventional (fixed speed) cruise control mode	Forward Collision Warning (FCW)	Forward Emergency Braking (FEB)	
U150B	ECM CAN CIRC3	ON	×	×	×	×	CCS-173, "DTC Logic"
U150C	VDC CAN CIRC3	ON	×	×	×	×	CCS-175, "DTC Logic"
U150D	TCM CAN CIRC3	ON	×	×	×	×	CCS-177, "DTC Logic"
U150E	BCM CAN CIRC3	ON	×	×	×	×	CCS-179, "DTC Logic"
U1513	METER CAN CIRC#	ON	×	×	×	×	CCS-181, "DTC Description"
U1514	STRG SEN CAN CIRC3	ON	×	×	×	×	CCS-183, "DTC Description"
U1515	ICC SENSOR CAN CIRC3	ON	×	×	×	×	CCS-185, "DTC Description"

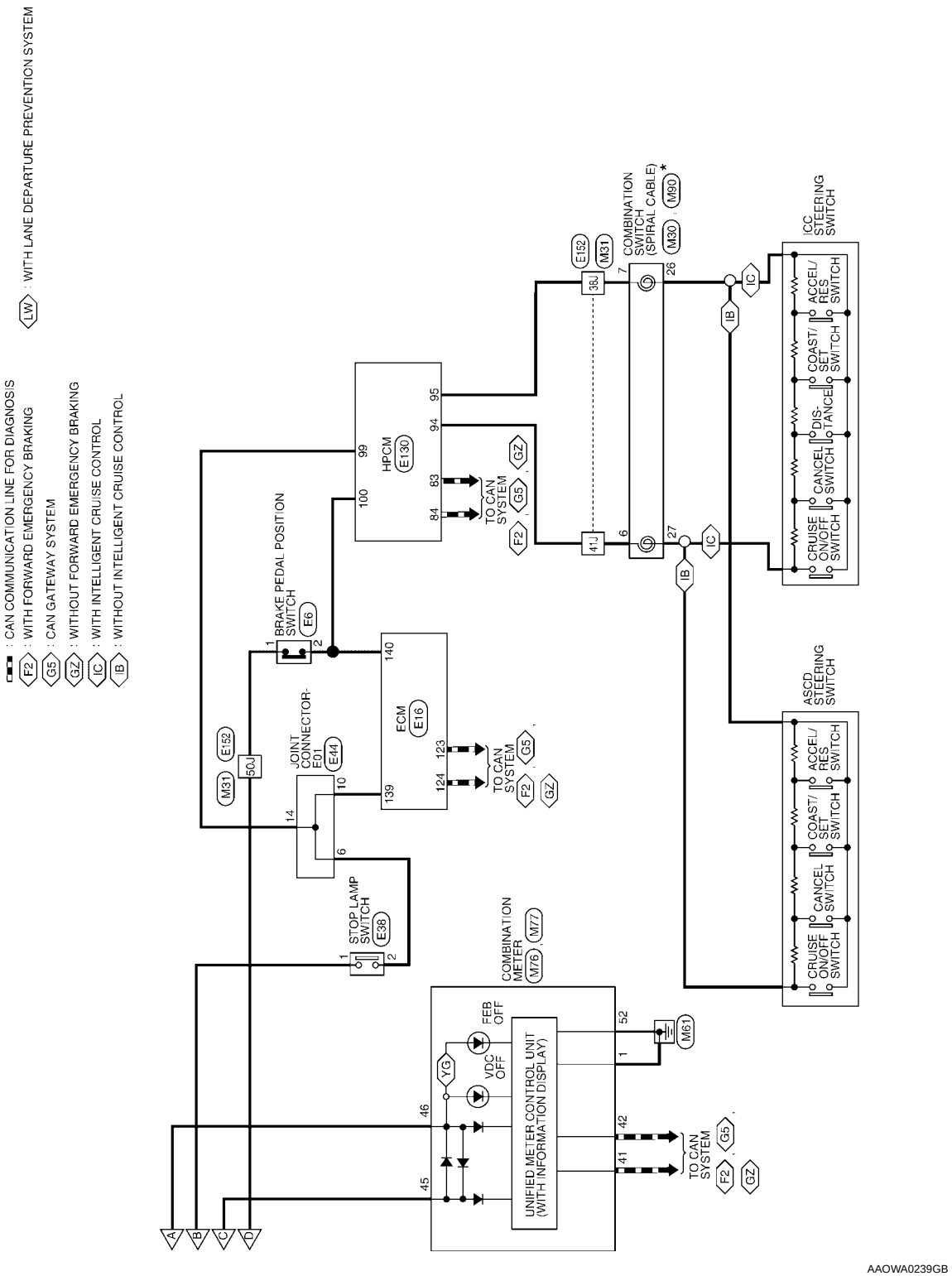
WIRING DIAGRAM

DRIVER ASSISTANCE SYSTEMS

Wiring Diagram

INFOID:0000000014895482




: CAN COMMUNICATION LINE FOR DIAGNOSIS
F2 : WITH FORWARD EMERGENCY BRAKING
G5 : CAN GATEWAY SYSTEM
GZ : WITHOUT FORWARD EMERGENCY BRAKING
IC : WITH INTELLIGENT CRUISE CONTROL
IB : WITHOUT INTELLIGENT CRUISE CONTROL
LW : WITH LANE DEPARTURE PREVENTION SYSTEM
HPCM E130
BRAKE PEDAL POSITION SWITCH E6
ECM E16
JOINT CONNECTOR-E01 E44
STOP LAMP SWITCH E38
COMBINATION METER M76 M77
UNIFIED METER CONTROL UNIT (WITH INFORMATION DISPLAY)
FEB OFF
VDC OFF
YG
COMBINATION SWITCH (SPIRAL CABLE) * M30 M90
ICC STEERING SWITCH
ACCEL/ RES SWITCH
COAST/ SET SWITCH
DIS-TANCE
CANCEL SWITCH
CRUISE ON/OFF SWITCH
ASCD STEERING SWITCH
TO CAN SYSTEM
AAOWA0239GB

DRIVER ASSISTANCE SYSTEM CONNECTORS

Connector No.	B4
Connector Name	ADAS CONTROL UNIT
Connector Type	TH24FW-NH
Connector Color	WHITE

H.S.

12	11	10	9	8	7	6	5	4	3	2	1
24	23	22	21	20	19	18	17	16	15	14	13

Terminal No.	Color of Wire	Signal Name
1	L	V-CAN H
2	R	V-CAN L
3	–	–
4	–	–
5	B	GND
6	L	ITS-CAN H
7	Y	ITS-CAN L
8	L	IC-CAN H
9	W	IC-CAN L
10	–	–
11	–	–
12	P	IGN
13	–	–
14	–	–
15	–	–
16	–	–
17	–	–
18	W	BSW SW
19	BR	BSW LED
20	–	–
21	–	–
22	–	–
23	–	–
24	–	–

Connector No.	B30
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS08FW-CS
Connector Color	WHITE

H.S.

3Q		2Q	1Q
8Q	7Q	6Q	5Q	4Q

Terminal No.	Color of Wire	Signal Name
1Q	BG	ACCESSORY
2Q	BR	IGNITION
3Q	R	BATTERY
4Q	–	–
5Q	–	–
6Q	LA/L	BATTERY
7Q	–	–
8Q	–	–

Connector No.	B35
Connector Name	SIDE RADAR LH
Connector Type	JAD08FB-5P
Connector Color	BLACK

H.S.

1	2	3	4	5	6	7	8

Terminal No.	Color of Wire	Signal Name
1	–	–
2	–	–
3	–	–
4	R	LED INDICATOR L
5	BR	IGN POWER
6	L	ITS CAN-H
7	Y	ITS CAN-L
8	B	GND

Connector No.	B43
Connector Name	WIRE TO WIRE
Connector Type	TH16MW-NH
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
1	W	TO MAIN HARNESS
2	W	TO MAIN HARNESS
3	R	TO MAIN HARNESS
4	L	TO MAIN HARNESS
5	L	TO MAIN HARNESS
6	L	TO MAIN HARNESS
7	L	TO MAIN HARNESS
8	L	TO MAIN HARNESS
9	BR	TO MAIN HARNESS
10	BR	TO MAIN HARNESS
11	–	TO MAIN HARNESS
12	Y	TO MAIN HARNESS
13	R	TO MAIN HARNESS
14	Y	TO MAIN HARNESS
15	Y	TO MAIN HARNESS
16	Y	TO MAIN HARNESS

Connector No.	B105
Connector Name	SIDE RADAR RH
Connector Type	JAD08FB-6P
Connector Color	BLACK

H.S.

1	2	3	4	5	6	7	8

Terminal No.	Color of Wire	Signal Name
1	–	–
2	–	–
3	B	GND IDENT RH
4	G	LED INDICATOR
5	BR	IGN POWER
6	L	ITS CAN-H
7	Y	ITS CAN-L

8	B	GND

AAOIA0831GB

DRIVER ASSISTANCE SYSTEM CONNECTORS

Connector No.	B136
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1G	LA/GR	TO MAIN HARNESS
2G	LA/P	TO MAIN HARNESS
3G	Y	TO MAIN HARNESS
4G	L	TO MAIN HARNESS
5G	G	TO MAIN HARNESS
6G	LA/BR	TO MAIN HARNESS
7G	BR	TO MAIN HARNESS
8G	LA/L	TO MAIN HARNESS
9G	LA/R	TO MAIN HARNESS
10G	R	TO MAIN HARNESS
11G	G	TO MAIN HARNESS
12G	Y	TO MAIN HARNESS
13G	BR	TO MAIN HARNESS
14G	-	TO MAIN HARNESS
15G	Y	TO MAIN HARNESS
16G	-	TO MAIN HARNESS
17G	-	TO MAIN HARNESS
18G	R	TO MAIN HARNESS
19G	R	TO MAIN HARNESS
20G	W	TO MAIN HARNESS
21G	P	TO MAIN HARNESS
22G	P	TO MAIN HARNESS
23G	L	TO MAIN HARNESS
24G	W	TO MAIN HARNESS
25G	L	TO MAIN HARNESS
26G	-	TO MAIN HARNESS
27G	-	TO MAIN HARNESS
28G	-	TO MAIN HARNESS
29G	SB	TO MAIN HARNESS
30G	-	TO MAIN HARNESS
31G	-	TO MAIN HARNESS
32G	-	TO MAIN HARNESS
33G	-	TO MAIN HARNESS
34G	V	TO MAIN HARNESS
35G	BR	TO MAIN HARNESS
36G	SHIELD	TO MAIN HARNESS
37G	LG	TO MAIN HARNESS
38G	V	TO MAIN HARNESS
39G	SHIELD	TO MAIN HARNESS
40G	G	TO MAIN HARNESS
41G	R	TO MAIN HARNESS
42G	-	TO MAIN HARNESS
43G	-	TO MAIN HARNESS
44G	BG	TO MAIN HARNESS
45G	SHIELD	TO MAIN HARNESS
46G	W	TO MAIN HARNESS
47G	R	TO MAIN HARNESS
48G	SHIELD	TO MAIN HARNESS
49G	L	TO MAIN HARNESS
50G	Y	TO MAIN HARNESS
51G	-	TO MAIN HARNESS
52G	-	TO MAIN HARNESS
53G	-	TO MAIN HARNESS
54G	-	TO MAIN HARNESS
55G	-	TO MAIN HARNESS
56G	-	TO MAIN HARNESS
57G	-	TO MAIN HARNESS
58G	-	TO MAIN HARNESS
59G	-	TO MAIN HARNESS
60G	GR	TO MAIN HARNESS
61G	V	TO MAIN HARNESS
62G	-	TO MAIN HARNESS
63G	-	TO MAIN HARNESS
64G	-	TO MAIN HARNESS
65G	-	TO MAIN HARNESS
66G	-	TO MAIN HARNESS
67G	-	TO MAIN HARNESS
68G	-	TO MAIN HARNESS
69G	-	TO MAIN HARNESS
70G	-	TO MAIN HARNESS
71G	-	TO MAIN HARNESS
72G	-	TO MAIN HARNESS
73G	-	TO MAIN HARNESS
74G	-	TO MAIN HARNESS
75G	-	TO MAIN HARNESS
76G	-	TO MAIN HARNESS
77G	-	TO MAIN HARNESS
78G	LA/R	TO MAIN HARNESS
79G	LA/V	TO MAIN HARNESS
80G	LA/B	TO MAIN HARNESS
81G	LA/L	TO MAIN HARNESS
82G	-	TO MAIN HARNESS
83G	-	TO MAIN HARNESS
84G	-	TO MAIN HARNESS
85G	-	TO MAIN HARNESS
86G	-	TO MAIN HARNESS
87G	-	TO MAIN HARNESS
88G	-	TO MAIN HARNESS
89G	-	TO MAIN HARNESS
90G	-	TO MAIN HARNESS
91G	R	TO MAIN HARNESS
92G	BR	TO MAIN HARNESS
93G	W	TO MAIN HARNESS
94G	LA/V	TO MAIN HARNESS
95G	V	TO MAIN HARNESS
96G	G	TO MAIN HARNESS
97G	P	TO MAIN HARNESS
98G	GR	TO MAIN HARNESS
99G	LA/Y	TO MAIN HARNESS
100G	Y	TO MAIN HARNESS

16	B	TO MAIN HARNESS

Connector No.	D2
Connector Name	WIRE TO WIRE
Connector Type	NS16FW-CS
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
1	V	TO MAIN HARNESS
2	R	TO MAIN HARNESS
3	G	TO MAIN HARNESS
4	BR	TO MAIN HARNESS
5	P	TO MAIN HARNESS
6	LA/L	TO MAIN HARNESS
7	LA/BR	TO MAIN HARNESS
8	SB	TO MAIN HARNESS
9	GR	TO MAIN HARNESS
10	L	TO MAIN HARNESS
11	P	TO MAIN HARNESS
12	LG	TO MAIN HARNESS
13	Y	TO MAIN HARNESS
14	V	TO MAIN HARNESS
15	R	TO MAIN HARNESS

AAOIA0832GB

DRIVER ASSISTANCE SYSTEM CONNECTORS

Connector No.	D3
Connector Name	WIRE TO WIRE
Connector Type	TH32FW-NH
Connector Color	WHITE

H.S.

16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17

Terminal No.	Color of Wire	Signal Name
1	Y	TO MAIN HARNESS
2	GR	TO MAIN HARNESS
3	W	TO MAIN HARNESS - (WITHOUT AUTOMATIC DRIVE POSITIONER)
3	LA/SB	TO MAIN HARNESS - (WITH AUTOMATIC DRIVE POSITIONER)
4	V	TO MAIN HARNESS - (WITHOUT AUTOMATIC DRIVE POSITIONER)
4	LA/BG	TO MAIN HARNESS - (WITH AUTOMATIC DRIVE POSITIONER)
5	SB	TO MAIN HARNESS - (WITHOUT AUTOMATIC DRIVE POSITIONER)
5	LA/Y	TO MAIN HARNESS - (WITH AUTOMATIC DRIVE POSITIONER)
6	LG	TO MAIN HARNESS - (WITHOUT AUTOMATIC DRIVE POSITIONER)
6	LA/V	TO MAIN HARNESS - (WITH AUTOMATIC DRIVE POSITIONER)
7	W	TO MAIN HARNESS
8	V	TO MAIN HARNESS
9	SB	TO MAIN HARNESS
10	LG	TO MAIN HARNESS
11	GR	TO MAIN HARNESS
12	G	TO MAIN HARNESS
13	Y	TO MAIN HARNESS
14	B	TO MAIN HARNESS
15	BG	TO MAIN HARNESS
16	L	TO MAIN HARNESS
17	LA/SB	TO MAIN HARNESS - (WITH AUTOMATIC DRIVE POSITIONER)
17	LA/W	TO MAIN HARNESS - (WITHOUT AUTOMATIC DRIVE POSITIONER)
18	LA/Y	TO MAIN HARNESS - (WITHOUT AUTOMATIC DRIVE POSITIONER)
18	LA/W	TO MAIN HARNESS - (WITH AUTOMATIC DRIVE POSITIONER)
19	LA/LG	TO MAIN HARNESS - (WITHOUT AUTOMATIC DRIVE POSITIONER)
19	LA/BR	TO MAIN HARNESS - (WITH AUTOMATIC DRIVE POSITIONER)
20	LA/V	TO MAIN HARNESS - (WITHOUT AUTOMATIC DRIVE POSITIONER)
20	LA/GR	TO MAIN HARNESS - (WITH AUTOMATIC DRIVE POSITIONER)
21	BR	TO MAIN HARNESS
22	W	TO MAIN HARNESS
23	LA/R	TO MAIN HARNESS
24	GR	TO MAIN HARNESS
25	R	TO MAIN HARNESS
26	LA/G	TO MAIN HARNESS
27	LA/LG	TO MAIN HARNESS
28	LA/L	TO MAIN HARNESS
29	LA/Y	TO MAIN HARNESS
30	LA/V	TO MAIN HARNESS
31	LA/BR	TO MAIN HARNESS
32	P	TO MAIN HARNESS

Connector No.	D5
Connector Name	JOINT CONNECTOR-D01
Connector Type	SAC08JW
Connector Color	WHITE

H.S.

8	7	6	5	4	3	2	1

Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	B	GROUND
3	B	GROUND
4	B	GROUND
5	LA/B	GROUND
6	B	GROUND (WITHOUT AUTOMATIC DRIVE POSITIONER)
6	LA/B	GROUND (WITH AUTOMATIC DRIVE POSITIONER)
7	B	GROUND
8	LA/B	GROUND

Connector No.	D29
Connector Name	BLIND SPOT WARNING INDICATOR LH
Connector Type	TH04MW-NH
Connector Color	WHITE

H.S.

4	3	2	1

Terminal No.	Color of Wire	Signal Name
1	R	LED INDICATOR L
2	–	–
3	–	–
4	B	GROUND

Connector No.	D101
Connector Name	WIRE TO WIRE
Connector Type	TH24FW-NH
Connector Color	WHITE

H.S.

12	11	10	9	8	7	6	5	4	3	2	1
24	23	22	21	20	19	18	17	16	15	14	13

Terminal No.	Color of Wire	Signal Name
1	B	TO MAIN HARNESS
2	B	TO MAIN HARNESS
3	B	TO MAIN HARNESS
4	P	TO MAIN HARNESS
5	R	TO MAIN HARNESS
6	SB	TO MAIN HARNESS
7	L	TO MAIN HARNESS
8	V	TO MAIN HARNESS
9	Y	TO MAIN HARNESS
10	B	TO MAIN HARNESS
11	G	TO MAIN HARNESS
12	LA/V	TO MAIN HARNESS
13	LA/Y	TO MAIN HARNESS
14	LA/R	TO MAIN HARNESS
15	LA/V	TO MAIN HARNESS
16	LA/L	TO MAIN HARNESS
17	LA/BG	TO MAIN HARNESS
18	GR	TO MAIN HARNESS

19	LG	TO MAIN HARNESS
20	BR	TO MAIN HARNESS
21	LA/G	TO MAIN HARNESS
22	LA/SB	TO MAIN HARNESS
23	LA/BG	TO MAIN HARNESS
24	LA/Y	TO MAIN HARNESS

Connector No.	D115
Connector Name	BLIND SPOT WARNING INDICATOR RH
Connector Type	TH04MW-NH
Connector Color	WHITE

H.S.

4	3	2	1

Terminal No.	Color of Wire	Signal Name
1	G	LED INDICATOR
2	–	–
3	–	–
4	B	GROUND

Connector No.	E6
Connector Name	BRAKE PEDAL POSITION SWITCH
Connector Type	M02FBR-LC
Connector Color	BROWN

H.S.

2
1

Terminal No.	Color of Wire	Signal Name
1	P	IGNITION
2	GR	SWITCH OUTPUT

AAOIA0833GB

DRIVER ASSISTANCE SYSTEM CONNECTORS

Connector No.	E16
Connector Name	ECM
Connector Type	RH24FB-RZ8-L-LH
Connector Color	BLACK

H.S.

121	125	129	133	137	141	145	149
122	126	130	134	138	142	146	150
123	127	131	135	139	143	147	151
124	128	132	136	140	144	148	152

Terminal No.	Color of Wire	Signal Name
121	L	EVAP CONTROL SYSTEM PRESSURE SENSOR
122	–	–
123	P	CAN-L
124	L	CAN-H
125	R	SENSOR POWER SUPPLY
126	–	–
127	–	–
128	BG	FUEL TANK TEMPERATURE SENSOR
129	–	–
130	–	–
131	–	–
132	–	–
133	LG	IGNITION SWITCH
134	–	–
135	–	–
136	–	–
137	G	HEV CAN-L
138	L	HEV CAN-H
139	Y	STOP LAMP SWITCH
140	GR	BRAKE PEDAL POSITION SWITCH
141	Y	EVAP CANISTER VENT CONTROL VALVE
142	–	–
143	–	–
144	–	–
145	G	ECM POWER SUPPLY
146	–	–
147	GR	ECM GROUND
148	B	SENSOR GROUND
149	GR	ECM GROUND
150	–	–
151	–	–
152	GR	ECM GROUND

Connector No.	E21
Connector Name	DISTANCE SENSOR
Connector Type	SAZ08FGY
Connector Color	GRAY

H.S.

4	3	2	1
8	7	6	5

Terminal No.	Color of Wire	Signal Name
1	B	GND
2	R	ITS CAN-L
3	L	ITS CAN-H
4	–	–
5	–	–
6	–	–
7	–	–
8	SB	IGN

Connector No.	E28
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS10FW-CS
Connector Color	WHITE

H.S.

4M	3M		2M	1M
10M	9M	8M	7M	6M	5M

Terminal No.	Color of Wire	Signal Name
1M	–	–
2M	–	–
3M	–	–
4M	–	–
5M	V	BATTERY
6M	Y	O LIGHT POSITION REAR LH
7M	–	–
8M	–	–
9M	–	–
10M	–	–

Connector No.	E38
Connector Name	STOP LAMP SWITCH
Connector Type	M04FW-LC
Connector Color	WHITE

H.S.

3	4
1	2

Terminal No.	Color of Wire	Signal Name
1	V	BATTERY
2	LG	I BRAKE SW2
3	L	IGNITION
4	W	STOP LAMP SWITCH OUTPUT

Connector No.	E44
Connector Name	JOINT CONNECTOR-E01
Connector Type	NH24FG-J
Connector Color	GREEN

H.S.

4	3	2	1
8	7	6	5
12	11	10	9
16	15	14	13
20	19	18	17
24	23	22	21

Terminal No.	Color of Wire	Signal Name
1	V	SENSOR GROUND
2	LG	I BRAKE SW2
3	P	CAN-L
4	L	CAN-H
5	B	SENSOR GROUND
6	LG	I BRAKE SW2
7	P	CAN-L
8	L	CAN-H
9	W	SENSOR GROUND
10	Y	STOP LAMP SWITCH
11	P	CAN-L
12	L	CAN-H
13	–	–
14	R	STOP LAMP SWITCH
15	P	CAN-L
16	L	CAN-H
17	BR	EVAP CONTROL SYSTEM PRESSURE SENSOR
18	–	–
19	P	CAN-L
20	L	CAN-H
21	L	EVAP CONTROL SYSTEM PRESSURE SENSOR
22	–	–
23	–	–
24	–	–

AAOIA0834GB

DRIVER ASSISTANCE SYSTEM CONNECTORS

Connector No.	E130
Connector Name	HPCM
Connector Type	RH24FB-RZ8-L-RH
Connector Color	BLACK

H.S.

81	85	89	93	97	101	105	109
82	86	90	94	98	102	106	110
83	87	91	95	99	103	107	111
84	88	92	96	100	104	108	112

Terminal No.	Color of Wire	Signal Name
81	R	12V BATTERY VOLTAGE
82	–	–
83	P	CAN-L
84	L	CAN-H
85	–	–
86	–	–
87	–	–
88	B	DC/DC CONVERTER VOLTAGE STABILIZER SIGNAL
89	–	–
90	–	–
91	–	–
92	–	–
93	Y	IGNITION SIGNAL
94	G	ASCD STEERING SWITCH
95	BR	ASCD STEERING SWITCH GROUND
96	–	–
97	L	HEV SYSTEM CAN-H
98	G	HEV SYSTEM CAN-L
99	R	STOP LAMP SWITCH
100	W	BRAKE PEDAL POSITION SWITCH
101	–	–
102	SB	SENSOR POWER SUPPLY
103	BR	ACCELERATOR PEDAL POSITION SENSOR 2
104	LG	SENSOR GROUND
105	BR	POWER SUPPLY FOR HPCM
106	V	SENSOR POWER SUPPLY
107	–	–
108	B	HPCM GND
109	–	–
110	GR	ACCELERATOR PEDAL POSITION SENSOR 1
111	R	SENSOR GROUND
112	GR	HPCM GND

Connector No.	E152
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4
Connector Color	WHITE

H.S.

1J	2J	3J	4J	5J
6J	7J	8J	9J	10J

11J	12J	13J	14J	15J	16J	17J	18J	19J	20J	21J
22J	23J	24J	25J	26J	27J	28J	29J	30J		

31J	32J	33J	34J	35J	36J	37J	38J	39J	40J	41J
42J	43J	44J	45J	46J	47J	48J	49J	50J		

51J	52J	53J	54J	55J	56J	57J	58J	59J	60J	61J
62J	63J	64J	65J	66J	67J	68J	69J	70J		

71J	72J	73J	74J	75J	76J	77J	78J	79J	80J	81J
82J	83J	84J	85J	86J	87J	88J	89J	90J		

91J	92J	93J	94J	95J
96J	97J	98J	99J	100J

Terminal No.	Color of Wire	Signal Name
1J	–	TO MAIN HARNESS
2J	Y	TO MAIN HARNESS
3J	–	TO MAIN HARNESS
4J	–	TO MAIN HARNESS
5J	–	TO MAIN HARNESS
6J	–	TO MAIN HARNESS
7J	–	TO MAIN HARNESS
8J	–	TO MAIN HARNESS
9J	BR	TO MAIN HARNESS
10J	–	TO MAIN HARNESS
11J	–	TO MAIN HARNESS
12J	–	TO MAIN HARNESS
13J	–	TO MAIN HARNESS
14J	–	TO MAIN HARNESS
15J	–	TO MAIN HARNESS
16J	–	TO MAIN HARNESS
17J	–	TO MAIN HARNESS
18J	–	TO MAIN HARNESS
19J	–	TO MAIN HARNESS
20J	–	TO MAIN HARNESS
21J	GR	TO MAIN HARNESS
22J	SHIELD	TO MAIN HARNESS
23J	LG	TO MAIN HARNESS
24J	V	TO MAIN HARNESS
25J	L	TO MAIN HARNESS
26J	BR	TO MAIN HARNESS
27J	G	TO MAIN HARNESS

28J	R	TO MAIN HARNESS
29J	L	TO MAIN HARNESS
30J	V	TO MAIN HARNESS
31J	–	TO MAIN HARNESS
32J	–	TO MAIN HARNESS
33J	R	TO MAIN HARNESS
34J	L	TO MAIN HARNESS
35J	BG	TO MAIN HARNESS
36J	LG	TO MAIN HARNESS
37J	GR	TO MAIN HARNESS
38J	BR	TO MAIN HARNESS
39J	–	TO MAIN HARNESS
40J	–	TO MAIN HARNESS
41J	G	TO MAIN HARNESS
42J	W	TO MAIN HARNESS
43J	L	TO MAIN HARNESS
44J	B	TO MAIN HARNESS
45J	SB	TO MAIN HARNESS
46J	BR	TO MAIN HARNESS
47J	W	TO MAIN HARNESS
48J	W	TO MAIN HARNESS
49J	L	TO MAIN HARNESS
50J	P	TO MAIN HARNESS
51J	W	TO MAIN HARNESS
52J	R	TO MAIN HARNESS
53J	SB	TO MAIN HARNESS
54J	LG	TO MAIN HARNESS
55J	W	TO MAIN HARNESS
56J	BG	TO MAIN HARNESS
57J	R	TO MAIN HARNESS
58J	V	TO MAIN HARNESS
59J	BR	TO MAIN HARNESS
60J	P	TO MAIN HARNESS
61J	L	TO MAIN HARNESS
62J	P	TO MAIN HARNESS
63J	L	TO MAIN HARNESS
64J	R	TO MAIN HARNESS
65J	L	TO MAIN HARNESS
66J	BG	TO MAIN HARNESS
67J	–	TO MAIN HARNESS
68J	–	TO MAIN HARNESS
69J	G	TO MAIN HARNESS
70J	L	TO MAIN HARNESS
71J	–	TO MAIN HARNESS
72J	–	TO MAIN HARNESS
73J	–	TO MAIN HARNESS
74J	–	TO MAIN HARNESS
75J	–	TO MAIN HARNESS
76J	–	TO MAIN HARNESS
77J	–	TO MAIN HARNESS
78J	–	TO MAIN HARNESS
79J	SHIELD	TO MAIN HARNESS
80J	B	TO MAIN HARNESS

81J	W	TO MAIN HARNESS
82J	–	TO MAIN HARNESS
83J	–	TO MAIN HARNESS
84J	–	TO MAIN HARNESS
85J	–	TO MAIN HARNESS
86J	–	TO MAIN HARNESS
87J	–	TO MAIN HARNESS
88J	–	TO MAIN HARNESS
89J	–	TO MAIN HARNESS
90J	–	TO MAIN HARNESS
91J	GR	TO MAIN HARNESS
92J	LG	TO MAIN HARNESS
93J	L	TO MAIN HARNESS
94J	L	TO MAIN HARNESS
95J	BR	TO MAIN HARNESS
96J	–	TO MAIN HARNESS
97J	GR	TO MAIN HARNESS
98J	P	TO MAIN HARNESS
99J	W	TO MAIN HARNESS
100J	Y	TO MAIN HARNESS

Connector No.	M9
Connector Name	WIRE TO WIRE
Connector Type	TH16FW-NH
Connector Color	WHITE

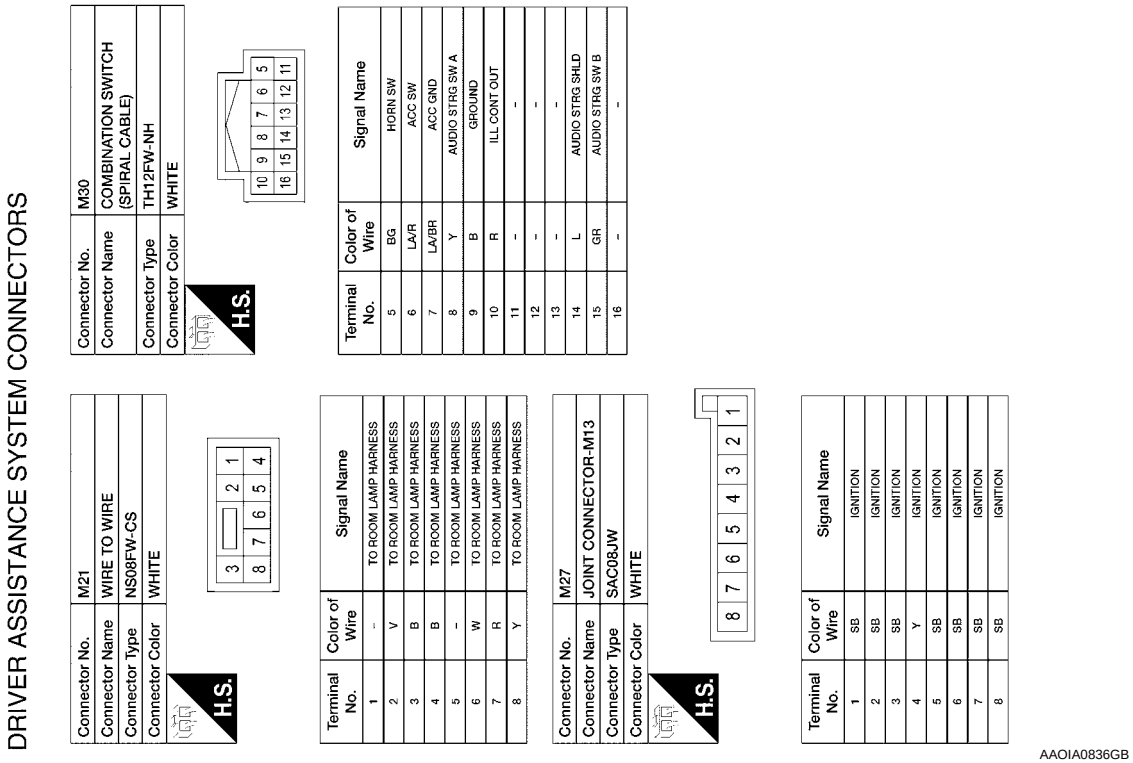
H.S.

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

Terminal No.	Color of Wire	Signal Name
1	LG	TO MAIN SUB HARNESS
2	B	TO MAIN SUB HARNESS
3	W	TO MAIN SUB HARNESS
4	B	TO MAIN SUB HARNESS
5	GR	TO MAIN SUB HARNESS
6	BG	TO MAIN SUB HARNESS
7	B	TO MAIN SUB HARNESS
8	B	TO MAIN SUB HARNESS
9	R	TO MAIN SUB HARNESS
10	B	TO MAIN SUB HARNESS
11	R	TO MAIN SUB HARNESS
12	SB	TO MAIN SUB HARNESS
13	BR	TO MAIN SUB HARNESS
14	B	TO MAIN SUB HARNESS
15	R	TO MAIN SUB HARNESS
16	B	TO MAIN SUB HARNESS

AAOIA0835GB

DRIVER ASSISTANCE SYSTEM CONNECTORS



AAOIA0836GB

DRIVER ASSISTANCE SYSTEM CONNECTORS

Connector No.	M31
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4
Connector Color	WHITE

H.S.

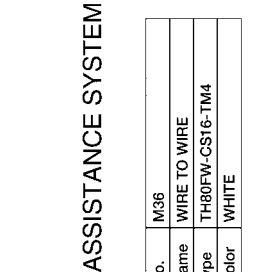
Terminal No.	Color of Wire	Signal Name
1J	–	TO ENGINE ROOM HARNESS
2J	R	TO ENGINE ROOM HARNESS
3J	–	TO ENGINE ROOM HARNESS
4J	–	TO ENGINE ROOM HARNESS
5J	–	TO ENGINE ROOM HARNESS
6J	–	TO ENGINE ROOM HARNESS
7J	–	TO ENGINE ROOM HARNESS
8J	–	TO ENGINE ROOM HARNESS
9J	W	TO ENGINE ROOM HARNESS
10J	–	TO ENGINE ROOM HARNESS
11J	–	TO ENGINE ROOM HARNESS
12J	–	TO ENGINE ROOM HARNESS
13J	–	TO ENGINE ROOM HARNESS
14J	–	TO ENGINE ROOM HARNESS
15J	–	TO ENGINE ROOM HARNESS
16J	–	TO ENGINE ROOM HARNESS
17J	–	TO ENGINE ROOM HARNESS
18J	–	TO ENGINE ROOM HARNESS
19J	–	TO ENGINE ROOM HARNESS
20J	–	TO ENGINE ROOM HARNESS
21J	LA/L	TO ENGINE ROOM HARNESS
22J	SHIELD	TO ENGINE ROOM HARNESS
23J	LG	TO ENGINE ROOM HARNESS
24J	V	TO ENGINE ROOM HARNESS
25J	L	TO ENGINE ROOM HARNESS
26J	BR	TO ENGINE ROOM HARNESS
27J	G	TO ENGINE ROOM HARNESS
28J	Y	TO ENGINE ROOM HARNESS
29J	L	TO ENGINE ROOM HARNESS
30J	V	TO ENGINE ROOM HARNESS
31J	–	TO ENGINE ROOM HARNESS
32J	–	TO ENGINE ROOM HARNESS
33J	R	TO ENGINE ROOM HARNESS
33J	Y	TO ENGINE ROOM HARNESS - (WITH DRIVER ASSISTNACE SYSTEM)
34J	L	TO ENGINE ROOM HARNESS
35J	BG	TO ENGINE ROOM HARNESS
36J	GR	TO ENGINE ROOM HARNESS
37J	Y	TO ENGINE ROOM HARNESS
38J	LA/BR	TO ENGINE ROOM HARNESS
39J	–	TO ENGINE ROOM HARNESS
40J	–	TO ENGINE ROOM HARNESS
41J	LA/R	TO ENGINE ROOM HARNESS
42J	W	TO ENGINE ROOM HARNESS
43J	L	TO ENGINE ROOM HARNESS
44J	B	TO ENGINE ROOM HARNESS
45J	SB	TO ENGINE ROOM HARNESS
46J	BR	TO ENGINE ROOM HARNESS
47J	W	TO ENGINE ROOM HARNESS
48J	R	TO ENGINE ROOM HARNESS
49J	SB	TO ENGINE ROOM HARNESS
50J	GR	TO ENGINE ROOM HARNESS
51J	W	TO ENGINE ROOM HARNESS
52J	R	TO ENGINE ROOM HARNESS
53J	BR	TO ENGINE ROOM HARNESS
54J	LG	TO ENGINE ROOM HARNESS
55J	LA/Y	TO ENGINE ROOM HARNESS
56J	LA/V	TO ENGINE ROOM HARNESS
57J	LA/R	TO ENGINE ROOM HARNESS
58J	W	TO ENGINE ROOM HARNESS
59J	BR	TO ENGINE ROOM HARNESS
60J	P	TO ENGINE ROOM HARNESS
61J	L	TO ENGINE ROOM HARNESS
62J	R	TO ENGINE ROOM HARNESS
63J	L	TO ENGINE ROOM HARNESS
64J	R	TO ENGINE ROOM HARNESS
65J	L	TO ENGINE ROOM HARNESS
66J	BG	TO ENGINE ROOM HARNESS
67J	–	TO ENGINE ROOM HARNESS
68J	–	TO ENGINE ROOM HARNESS
69J	G	TO ENGINE ROOM HARNESS
70J	L	TO ENGINE ROOM HARNESS
71J	–	TO ENGINE ROOM HARNESS
72J	–	TO ENGINE ROOM HARNESS
73J	–	TO ENGINE ROOM HARNESS
74J	–	TO ENGINE ROOM HARNESS
75J	–	TO ENGINE ROOM HARNESS
76J	–	TO ENGINE ROOM HARNESS
77J	–	TO ENGINE ROOM HARNESS
78J	–	TO ENGINE ROOM HARNESS
79J	SHIELD	TO ENGINE ROOM HARNESS
80J	B	TO ENGINE ROOM HARNESS
81J	W	TO ENGINE ROOM HARNESS
82J	–	TO ENGINE ROOM HARNESS
83J	–	TO ENGINE ROOM HARNESS
84J	–	TO ENGINE ROOM HARNESS
85J	–	TO ENGINE ROOM HARNESS
86J	–	TO ENGINE ROOM HARNESS
87J	–	TO ENGINE ROOM HARNESS
88J	–	TO ENGINE ROOM HARNESS
89J	–	TO ENGINE ROOM HARNESS
90J	–	TO ENGINE ROOM HARNESS
91J	–	TO ENGINE ROOM HARNESS
92J	Y	TO ENGINE ROOM HARNESS
93J	G	TO ENGINE ROOM HARNESS
94J	L	TO ENGINE ROOM HARNESS
95J	P	TO ENGINE ROOM HARNESS
96J	–	TO ENGINE ROOM HARNESS
97J	SB	TO ENGINE ROOM HARNESS
98J	P	TO ENGINE ROOM HARNESS
99J	LA/R	TO ENGINE ROOM HARNESS
100J	R	TO ENGINE ROOM HARNESS

AAOIA0837GB

DRIVER ASSISTANCE SYSTEM CONNECTORS

Connector No.	M36
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
1G	LA/R	TO BODY NO. 2 HARNESS
2G	W	TO BODY NO. 2 HARNESS
3G	Y	TO BODY NO. 2 HARNESS
4G	BG	TO BODY NO. 2 HARNESS
5G	G	TO BODY NO. 2 HARNESS
6G	SB	TO BODY NO. 2 HARNESS
7G	P	TO BODY NO. 2 HARNESS
8G	LA/Y	TO BODY NO. 2 HARNESS
9G	LA/W	TO BODY NO. 2 HARNESS
10G	R	TO BODY NO. 2 HARNESS
11G	G	TO BODY NO. 2 HARNESS
12G	L	TO BODY NO. 2 HARNESS
13G	BR	TO BODY NO. 2 HARNESS
14G	–	TO BODY NO. 2 HARNESS
15G	Y	TO BODY NO. 2 HARNESS
16G	–	TO BODY NO. 2 HARNESS
17G	–	TO BODY NO. 2 HARNESS
18G	R	TO BODY NO. 2 HARNESS
19G	LA/R	TO BODY NO. 2 HARNESS
20G	W	TO BODY NO. 2 HARNESS
21G	BR	TO BODY NO. 2 HARNESS
22G	P	TO BODY NO. 2 HARNESS
23G	L	TO BODY NO. 2 HARNESS
24G	W	TO BODY NO. 2 HARNESS
25G	L	TO BODY NO. 2 HARNESS
26G	–	TO BODY NO. 2 HARNESS
27G	–	TO BODY NO. 2 HARNESS
28G	–	TO BODY NO. 2 HARNESS
29G	–	TO BODY NO. 2 HARNESS
30G	–	TO BODY NO. 2 HARNESS
31G	–	TO BODY NO. 2 HARNESS
32G	–	TO BODY NO. 2 HARNESS
33G	–	TO BODY NO. 2 HARNESS
34G	V	TO BODY NO. 2 HARNESS
35G	BR	TO BODY NO. 2 HARNESS
36G	SHIELD	TO BODY NO. 2 HARNESS
37G	LG	TO BODY NO. 2 HARNESS
38G	V	TO BODY NO. 2 HARNESS
39G	SHIELD	TO BODY NO. 2 HARNESS
40G	G	TO BODY NO. 2 HARNESS
41G	R	TO BODY NO. 2 HARNESS
42G	–	TO BODY NO. 2 HARNESS
43G	–	TO BODY NO. 2 HARNESS
44G	BG	TO BODY NO. 2 HARNESS
45G	SHIELD	TO BODY NO. 2 HARNESS
46G	L	TO BODY NO. 2 HARNESS
47G	Y	TO BODY NO. 2 HARNESS
48G	SHIELD	TO BODY NO. 2 HARNESS
49G	W	TO BODY NO. 2 HARNESS
50G	R	TO BODY NO. 2 HARNESS
51G	–	TO BODY NO. 2 HARNESS
52G	–	TO BODY NO. 2 HARNESS
53G	–	TO BODY NO. 2 HARNESS
54G	–	TO BODY NO. 2 HARNESS
55G	–	TO BODY NO. 2 HARNESS
56G	–	TO BODY NO. 2 HARNESS
57G	–	TO BODY NO. 2 HARNESS
58G	–	TO BODY NO. 2 HARNESS
59G	–	TO BODY NO. 2 HARNESS
60G	GR	TO BODY NO. 2 HARNESS
61G	BR	TO BODY NO. 2 HARNESS
62G	–	TO BODY NO. 2 HARNESS
63G	–	TO BODY NO. 2 HARNESS
64G	–	TO BODY NO. 2 HARNESS
65G	–	TO BODY NO. 2 HARNESS
66G	–	TO BODY NO. 2 HARNESS
67G	–	TO BODY NO. 2 HARNESS
68G	–	TO BODY NO. 2 HARNESS
69G	–	TO BODY NO. 2 HARNESS
70G	–	TO BODY NO. 2 HARNESS
71G	–	TO BODY NO. 2 HARNESS
72G	–	TO BODY NO. 2 HARNESS
73G	–	TO BODY NO. 2 HARNESS
74G	–	TO BODY NO. 2 HARNESS
76G	–	TO BODY NO. 2 HARNESS
77G	–	TO BODY NO. 2 HARNESS
78G	LA/Y	TO BODY NO. 2 HARNESS
79G	LA/V	TO BODY NO. 2 HARNESS
80G	LA/B	TO BODY NO. 2 HARNESS
81G	LA/L	TO BODY NO. 2 HARNESS
82G	–	TO BODY NO. 2 HARNESS
83G	–	TO BODY NO. 2 HARNESS
84G	–	TO BODY NO. 2 HARNESS
85G	–	TO BODY NO. 2 HARNESS
86G	–	TO BODY NO. 2 HARNESS
87G	–	TO BODY NO. 2 HARNESS
88G	–	TO BODY NO. 2 HARNESS
89G	–	TO BODY NO. 2 HARNESS
90G	–	TO BODY NO. 2 HARNESS
91G	R	TO BODY NO. 2 HARNESS
92G	LA/L	TO BODY NO. 2 HARNESS
93G	W	TO BODY NO. 2 HARNESS
94G	LG	TO BODY NO. 2 HARNESS
95G	GR	TO BODY NO. 2 HARNESS
96G	SB	TO BODY NO. 2 HARNESS
97G	LA/BR	TO BODY NO. 2 HARNESS
98G	GR	TO BODY NO. 2 HARNESS
99G	Y	TO BODY NO. 2 HARNESS
100G	V	TO BODY NO. 2 HARNESS

Connector No.	M44
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS16FW-CS
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
1P	R	IGNITION
2P	G	IGNITION
3P	Y	IGNITION RELAY-2 CONTROL
4P	LG	REAR WINDOW DEFOGGER RELAY OUTPUT
5P	GR	REAR WINDOW DEFOGGER RELAY OUTPUT
6P	LA/R	REAR WINDOW DEFOGGER RELAY CONTROL
7P	Y	IGNITION
8P	V	IGNITION
9P	L	BATTERY
10P	LG	IGNITION
11P	–	–
12P	–	–
13P	G	BATTERY
14P	–	–

15P	L
16P	LA/W

L	BATTERY
LA/W	FRONT BLOWER MOTOR RELAY CONTROL

Connector No.	M52
Connector Name	WIRE TO WIRE
Connector Type	TH16FW-NH
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
1	W	TO BODY HARNESS
2	W	TO BODY HARNESS
3	R	TO BODY HARNESS
4	L	TO BODY HARNESS
5	L	TO BODY HARNESS
6	L	TO BODY HARNESS
7	L	TO BODY HARNESS
8	L	TO BODY HARNESS
9	BR	TO BODY HARNESS
10	BR	TO BODY HARNESS
11	–	TO BODY HARNESS
12	Y	TO BODY HARNESS
13	R	TO BODY HARNESS
14	R	TO BODY HARNESS
15	Y	TO BODY HARNESS
16	Y	TO BODY HARNESS

AAOIA0838GB

DRIVER ASSISTANCE SYSTEM CONNECTORS

Connector No.	M67
Connector Name	JOINT CONNECTOR-M27
Connector Type	SAC08JW
Connector Color	WHITE

H.S.

8 7 6 5 4 3 2 1

Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	B	GROUND
3	B	GROUND
4	B	GROUND
5	B	GROUND
6	B	GROUND
7	B	GROUND
8	B	GROUND

Connector No.	M68
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS16FBR-CS
Connector Color	BROWN

H.S.

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

Terminal No.	Color of Wire	Signal Name
1R	V	ILLUMINATION +
2R	G	IGNITION
3R	V	BATTERY
4R	-	-
5R	-	-
6R	LA/L	ACCESSORY
7R	LA/V	BATTERY
8R	-	-
9R	-	-
10R	GR	BATTERY
11R	-	-
12R	-	-
13R	-	-
14R	W	BATTERY
15R	W	BATTERY

16R	GR	ACCESSORY

Connector No.	M76
Connector Name	COMBINATION METER
Connector Type	TH40FW-NH
Connector Color	WHITE

H.S.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

Terminal No.	Color of Wire	Signal Name
1	B	GND
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-
7	BG	SECURITY
8	-	-
9	GR	ECO MODE SW
10	-	-
11	-	-
12	-	-
13	-	-
14	-	-
15	L	OUTSIDE TEMP SENSOR
16	-	-
17	BG	SATELLITE SW GND
18	SB	TRIP RESET SW
19	-	-
20	Y	OUTSIDE TEMP GND
21	L	GND (STRG SW GND)
22	Y	STRG SW A
23	GR	STRG SW B
24	BR	WASHER SW
25	V	BRAKE OIL SW
26	G	PKB SW
27	-	-
28	Y	DR BELT SW
29	R	SPORT MODE SW
30	LG	M RANGE
31	SB	NOT M RANGE
32	BG	AT SHIFT UP
33	BR	AT SHIFT DOWN
34	-	-
35	-	-
36	GR	ILL UP SW
37	V	ILL DOWN SW
38	G	8P/R OUTPUT
39	W	2P/R OUTPUT
40	-	-

Connector No.	M77
Connector Name	COMBINATION METER
Connector Type	TH12FW-NH
Connector Color	WHITE

H.S.

41 42 43 44 45 46
47 48 49 50 51 52

Terminal No.	Color of Wire	Signal Name
41	L	CAN-H
42	P	CAN-L
43	R	ILL CONT OUT
44	LA/B	FUEL SENSOR GND
45	G	BAT
46	V	IGN
47	SB	M-CAN H
48	LG	M-CAN L
49	-	-
50	-	-
51	LA/L	FUEL SENSOR
52	B	G1

22	-	-
23	R	ILL (+)
24	Y	ILL (-)
25	P	AUDIO STRG SW A
26	GR	ACC GND
27	V	ACC SW
28	BR	HORN SW

Connector No.	M90
Connector Name	COMBINATION SWITCH (SPIRAL CABLE)
Connector Type	TH12FW-NH
Connector Color	WHITE

H.S.

22 21 20 19 18 17
28 27 26 25 24 23

Terminal No.	Color of Wire	Signal Name
17	-	-
18	L	AUDIO STRG SW B
19	G	AUDIO STRG SHLD
20	-	-
21	-	-

AAOIA0839GB

DRIVER ASSISTANCE SYSTEM CONNECTORS

Connector No.	M91
Connector Name	WIRE TO WIRE
Connector Type	TH24MW-NH
Connector Color	WHITE

H.S.

1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24

Terminal No.	Color of Wire	Signal Name
1	B	TO FRONT DOOR RH HARNESS
2	GR	TO FRONT DOOR RH HARNESS
3	GR	TO FRONT DOOR RH HARNESS
4	W	TO FRONT DOOR RH HARNESS
5	P	TO FRONT DOOR RH HARNESS
6	SB	TO FRONT DOOR RH HARNESS
7	B	TO FRONT DOOR RH HARNESS
8	L	TO FRONT DOOR RH HARNESS
9	Y	TO FRONT DOOR RH HARNESS
10	SHIELD	TO FRONT DOOR RH HARNESS
11	G	TO FRONT DOOR RH HARNESS
12	V	TO FRONT DOOR RH HARNESS
13	Y	TO FRONT DOOR RH HARNESS - (WITH AUTOMATIC DRIVE POSITIONER)
13	LA/SB	TO FRONT DOOR RH HARNESS - (WITHOUT AUTOMATIC DRIVE POSITIONER)
14	R	TO FRONT DOOR RH HARNESS - (WITH AUTOMATIC DRIVE POSITIONER)
14	LA/GR	TO FRONT DOOR RH HARNESS - (WITHOUT AUTOMATIC DRIVE POSITIONER)
15	V	TO FRONT DOOR RH HARNESS - (WITH AUTOMATIC DRIVE POSITIONER)
15	LA/V	TO FRONT DOOR RH HARNESS - (WITHOUT AUTOMATIC DRIVE POSITIONER)
16	LA/L	TO FRONT DOOR RH HARNESS
17	LA/BG	TO FRONT DOOR RH HARNESS
18	GR	TO FRONT DOOR RH HARNESS
19	LG	TO FRONT DOOR RH HARNESS
20	BR	TO FRONT DOOR RH HARNESS
21	LA/Y	TO FRONT DOOR RH HARNESS
22	SB	TO FRONT DOOR RH HARNESS
23	BG	TO FRONT DOOR RH HARNESS
24	Y	TO FRONT DOOR RH HARNESS

Connector No.	M148
Connector Name	ADAS CONTROL UNIT 2
Connector Type	TH24FW-NH
Connector Color	WHITE

H.S.

12	11	10	9	8	7	6	5	4	3	2	1
24	23	22	21	20	19	18	17	16	15	14	13

Terminal No.	Color of Wire	Signal Name
1	BR	GND
2	L	ITS CAN-H
3	P	IGN
4	-	-
5	Y	ITS CAN-L
6	Y	3RD CAN-L
7	-	-
8	-	-
9	L	V-CAN-H
10	R	V-CAN-L
11	W	BSW SW
12	GR	SPOUT (+)
13	-	-
14	-	-
15	-	-
16	-	-
17	BR	BSW LED
18	L	3RD CAN-H
19	-	-
20	-	-
21	-	-
22	-	-
23	-	-
24	B	SPOUT (-)

Connector No.	M149
Connector Name	WARNING BUZZER
Connector Type	NS02FW-CS
Connector Color	WHITE

H.S.

2	1

Terminal No.	Color of Wire	Signal Name
1	GR	SPOUT (+)
2	B	SPOUT (-)

Connector No.	M156
Connector Name	WIRE TO WIRE
Connector Type	TH24FW-CS
Connector Color	WHITE

H.S.

12	11	10	9	8	7	6	5	4	3	2	1
24	23	22	21	20	19	18	17	16	15	14	13

Terminal No.	Color of Wire	Signal Name
1	B	TO ROOM LAMP HARNESS
2	W	TO ROOM LAMP HARNESS
3	SHIELD	TO ROOM LAMP HARNESS
4	R	TO ROOM LAMP HARNESS
5	-	TO ROOM LAMP HARNESS
6	Y	TO ROOM LAMP HARNESS
7	LG	TO ROOM LAMP HARNESS
8	L	TO ROOM LAMP HARNESS
9	R	TO ROOM LAMP HARNESS
10	-	TO ROOM LAMP HARNESS
11	-	TO ROOM LAMP HARNESS
12	-	TO ROOM LAMP HARNESS
13	SB	TO ROOM LAMP HARNESS
14	GR	TO ROOM LAMP HARNESS
15	SB	TO ROOM LAMP HARNESS
16	GR	TO ROOM LAMP HARNESS
17	V	TO ROOM LAMP HARNESS
18	G	TO ROOM LAMP HARNESS
19	SB	TO ROOM LAMP HARNESS
20	R	TO ROOM LAMP HARNESS
21	B	TO ROOM LAMP HARNESS
22	GR	TO ROOM LAMP HARNESS
23	-	TO ROOM LAMP HARNESS
24	-	TO ROOM LAMP HARNESS

Connector No.	M167
Connector Name	WIRE TO WIRE
Connector Type	NS16MW-CS
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
1	V	TO FRONT DOOR LH HARNESS
2	R	TO FRONT DOOR LH HARNESS
3	G	TO FRONT DOOR LH HARNESS
4	BR	TO FRONT DOOR LH HARNESS
5	P	TO FRONT DOOR LH HARNESS
6	Y	TO FRONT DOOR LH HARNESS - (WITHOUT BOSE AUDIO SYSTEM)
6	LA/L	TO FRONT DOOR LH HARNESS - (WITH BOSE AUDIO SYSTEM)
7	R	TO FRONT DOOR LH HARNESS - (WITHOUT BOSE AUDIO SYSTEM)
7	LA/BR	TO FRONT DOOR LH HARNESS - (WITH BOSE AUDIO SYSTEM)
8	L	TO FRONT DOOR LH HARNESS
9	LA/BR	TO FRONT DOOR LH HARNESS
10	LA/GR	TO FRONT DOOR LH HARNESS
11	Y	TO FRONT DOOR LH HARNESS
12	BG	TO FRONT DOOR LH HARNESS
13	LA/G	TO FRONT DOOR LH HARNESS
14	LA/R	TO FRONT DOOR LH HARNESS
15	P	TO FRONT DOOR LH HARNESS
16	B	TO FRONT DOOR LH HARNESS

22	GR	TO ROOM LAMP HARNESS
23	-	TO ROOM LAMP HARNESS
24	-	TO ROOM LAMP HARNESS

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DRIVER ASSISTANCE SYSTEM CONNECTORS

Connector No.	M168
Connector Name	WIRE TO WIRE
Connector Type	TH32MW-NH
Connector Color	WHITE

H.S.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32

Terminal No.	Color of Wire	Signal Name
1	Y	TO FRONT DOOR LH HARNESS
2	GR	TO FRONT DOOR LH HARNESS
3	SB	TO FRONT DOOR LH HARNESS - (WITH AUTOMATIC DRIVE POSITIONER)
3	Y	TO FRONT DOOR LH HARNESS - (WITHOUT AUTOMATIC DRIVE POSITIONER)
4	BG	TO FRONT DOOR LH HARNESS - (WITH AUTOMATIC DRIVE POSITIONER)
4	V	TO FRONT DOOR LH HARNESS - (WITHOUT AUTOMATIC DRIVE POSITIONER)
5	Y	TO FRONT DOOR LH HARNESS - (WITH AUTOMATIC DRIVE POSITIONER)
5	BR	TO FRONT DOOR LH HARNESS - (WITHOUT AUTOMATIC DRIVE POSITIONER)
6	V	TO FRONT DOOR LH HARNESS - (WITH AUTOMATIC DRIVE POSITIONER)
6	LG	TO FRONT DOOR LH HARNESS - (WITHOUT AUTOMATIC DRIVE POSITIONER)
7	Y	TO FRONT DOOR LH HARNESS
8	V	TO FRONT DOOR LH HARNESS
9	BR	TO FRONT DOOR LH HARNESS
10	LG	TO FRONT DOOR LH HARNESS
11	L	TO FRONT DOOR LH HARNESS
12	Y	TO FRONT DOOR LH HARNESS
13	G	TO FRONT DOOR LH HARNESS
14	SHIELD	TO FRONT DOOR LH HARNESS
15	SB	TO FRONT DOOR LH HARNESS
16	BG	TO FRONT DOOR LH HARNESS
17	GR	TO FRONT DOOR LH HARNESS - (WITHOUT AUTOMATIC DRIVE POSITIONER)
17	SB	TO FRONT DOOR LH HARNESS - (WITH AUTOMATIC DRIVE POSITIONER)
18	W	TO FRONT DOOR LH HARNESS - (WITH AUTOMATIC DRIVE POSITIONER)
18	LA/SB	TO FRONT DOOR LH HARNESS - (WITHOUT AUTOMATIC DRIVE POSITIONER)
19	BR	TO FRONT DOOR LH HARNESS - (WITH AUTOMATIC DRIVE POSITIONER)
19	LA/GR	TO FRONT DOOR LH HARNESS - (WITHOUT AUTOMATIC DRIVE POSITIONER)
20	GR	TO FRONT DOOR LH HARNESS - (WITH AUTOMATIC DRIVE POSITIONER)
20	LA/V	TO FRONT DOOR LH HARNESS - (WITHOUT AUTOMATIC DRIVE POSITIONER)
21	BR	TO FRONT DOOR LH HARNESS
22	W	TO FRONT DOOR LH HARNESS
23	R	TO FRONT DOOR LH HARNESS - (WITH AUTOMATIC DRIVE POSITIONER)
23	LA/R	TO FRONT DOOR LH HARNESS - (WITHOUT AUTOMATIC DRIVE POSITIONER)
24	GR	TO FRONT DOOR LH HARNESS
25	R	TO FRONT DOOR LH HARNESS - LED INDICATOR L
26	LA/G	TO FRONT DOOR LH HARNESS
27	LG	TO FRONT DOOR LH HARNESS
28	L	TO FRONT DOOR LH HARNESS
29	Y	TO FRONT DOOR LH HARNESS
30	V	TO FRONT DOOR LH HARNESS
31	G	TO FRONT DOOR LH HARNESS
32	P	TO FRONT DOOR LH HARNESS

Connector No.	M193
Connector Name	JOINT CONNECTOR-M18
Connector Type	SAC08JW
Connector Color	WHITE

H.S.

8	7	6	5	4	3	2	1

Terminal No.	Color of Wire	Signal Name
1	GR	ACCESSORY
2	GR	ACCESSORY
3	GR	ACCESSORY
4	GR	ACCESSORY
5	SB	AUTO ACC
6	GR	ACCESSORY
7	GR	ACCESSORY
8	W	ACCESSORY

Connector No.	M251
Connector Name	WIRE TO WIRE
Connector Type	TH16MW-NH
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
1	LG	TO MAIN HARNESS
2	B	TO MAIN HARNESS
3	W	TO MAIN HARNESS
4	B	TO MAIN HARNESS
5	B	TO MAIN HARNESS
6	BG	TO MAIN HARNESS
7	B	TO MAIN HARNESS
8	B	TO MAIN HARNESS
9	R	TO MAIN HARNESS
10	B	TO MAIN HARNESS
11	G	TO MAIN HARNESS
12	BG	TO MAIN HARNESS
13	BR	TO MAIN HARNESS
14	B	TO MAIN HARNESS
15	R	TO MAIN HARNESS
16	B	TO MAIN HARNESS

Connector No.	M255
Connector Name	WARNING SYSTEM SWITCH
Connector Type	TH08FW-NH
Connector Color	WHITE

H.S.

4	6	3
2	1	5

Terminal No.	Color of Wire	Signal Name
1	W	BSW SW
2	B	GROUND
3	G	ILL CONT OUT
4	B	GROUND
5	BG	BATTERY
6	BR	BSW LED

7	–	–
8	–	–

Connector No.	R1
Connector Name	WIRE TO WIRE
Connector Type	NS08MW-CS
Connector Color	WHITE

H.S.

1	2	3
4	5	6	7	8

Terminal No.	Color of Wire	Signal Name
1	–	TO MAIN HARNESS
2	P	TO MAIN HARNESS
3	B	TO MAIN HARNESS
4	B	TO MAIN HARNESS
5	–	TO MAIN HARNESS
6	W	TO MAIN HARNESS
7	Y	TO MAIN HARNESS
8	R	TO MAIN HARNESS

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DRIVER ASSISTANCE SYSTEM CONNECTORS

Connector No.	R11
Connector Name	WIRE TO WIRE
Connector Type	TH24MW-NH
Connector Color	WHITE

H.S.

1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24

Terminal No.	Color of Wire	Signal Name
1	B	TO MAIN HARNESS
2	W	TO MAIN HARNESS
3	SHIELD	TO MAIN HARNESS
4	SB	TO MAIN HARNESS
5	–	TO MAIN HARNESS
6	LG	TO MAIN HARNESS
7	LG	TO MAIN HARNESS
8	–	TO MAIN HARNESS
9	–	TO MAIN HARNESS
10	–	TO MAIN HARNESS
11	–	TO MAIN HARNESS
12	–	TO MAIN HARNESS
13	SB	TO MAIN HARNESS
14	P	TO MAIN HARNESS
15	–	TO MAIN HARNESS
16	–	TO MAIN HARNESS
17	–	TO MAIN HARNESS
18	–	TO MAIN HARNESS
19	SB	TO MAIN HARNESS
20	R	TO MAIN HARNESS
21	B	TO MAIN HARNESS
22	L	TO MAIN HARNESS
23	–	TO MAIN HARNESS
24	–	TO MAIN HARNESS

Connector No.	R17
Connector Name	LANE CAMERA UNIT
Connector Type	MUB12FB
Connector Color	BLACK

H.S.

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

Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	–	–
3	LG	IGN
4	–	–
5	L	CAN-H
6	Y	CAN-L
7	–	–
8	–	–
9	–	–
10	–	–
11	–	–
12	–	–

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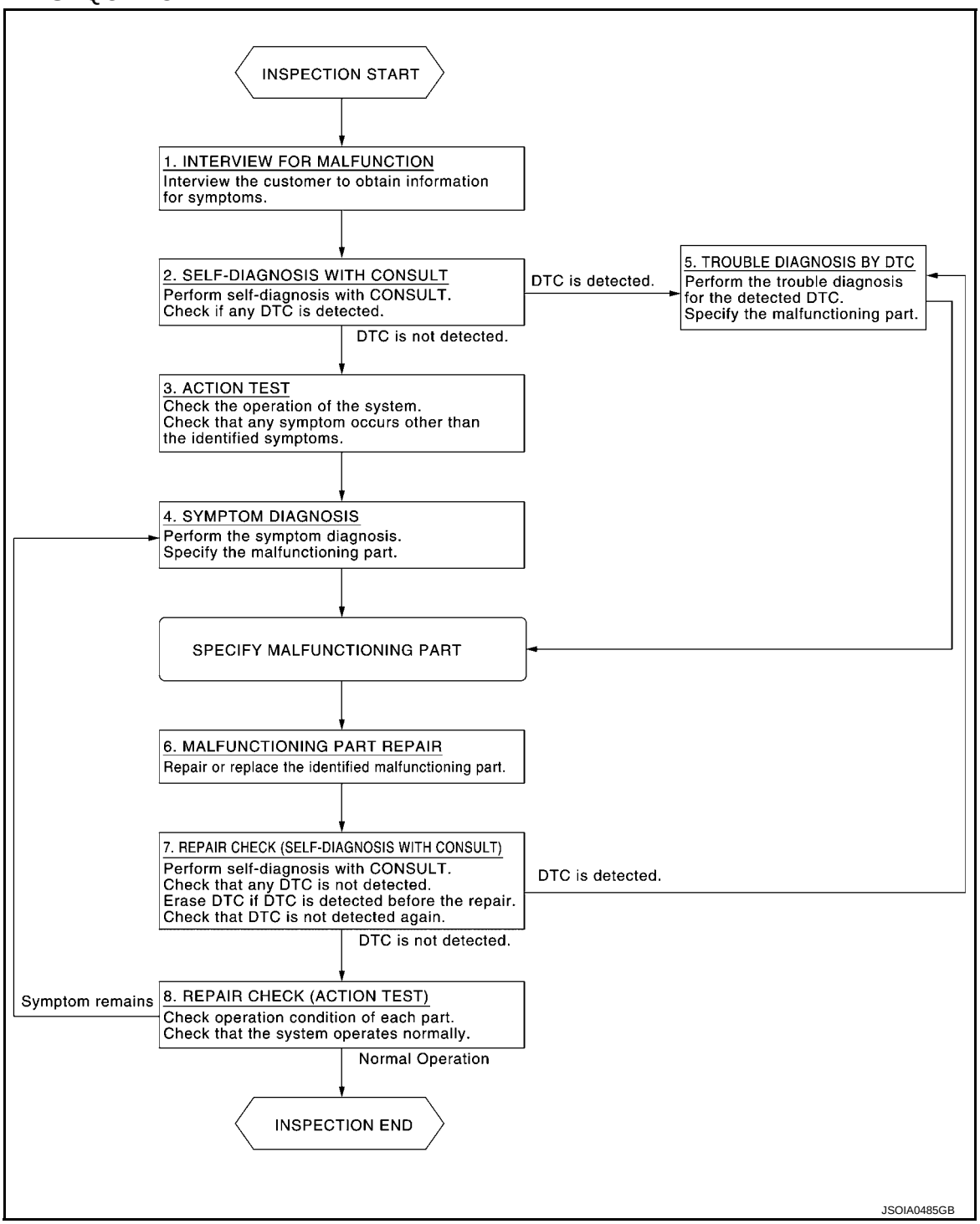
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:0000000015259654

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.

NOTE:
The customers are not professionals. Never assume that “maybe the customer means···” or “maybe the customer mentioned this symptom”.

>> GO TO 2.

2.SELF-DIAGNOSIS WITH CONSULT

1. Perform “All DTC Reading” with CONSULT.
2. Check if the DTC is detected on the self-diagnosis results of following.

- “ICC/ADAS”
- “LASER/RADAR”
- “ACCELE PEDAL ACT”
- “LANE CAMERA”
- “SIDE RADAR LEFT”
- “SIDE RADAR RIGHT”
- “BSW/BUZZER”

Is any DTC detected?

YES >> GO TO 5.
NO >> GO TO 3.

3.ACTION TEST

Perform Following system action test to check the operation status. Refer to CCS-102, "Description".
Check if any other malfunctions occur.

>> GO TO 4.

4.SYMPTOM DIAGNOSIS

Perform the applicable diagnosis according to the diagnosis chart by symptom. Refer to DAS-386, "Symptom Table".

>> GO TO 6.

5.TROUBLE DIAGNOSIS BY DTC

1. Check the DTC in the self-diagnosis results.
2. Perform trouble diagnosis for the detected DTC following.

- “ICC/ADAS”: Refer to CCS-80, "DTC Index"
- “LASER/RADAR” Refer to CCS-80, "DTC Index"
- “LANE CAMERA”: Refer toDAS-292, "DTC Index"
- “SIDE RADAR LEFT”: Refer to DAS-286, "DTC Index"
- “SIDE RADAR RIGHT”: Refer to DAS-288, "DTC Index"
- “BSW/BUZZER”: Refer to DAS-45, "DTC Index"

NOTE:
If “DTC: U1000” is detected, first diagnose the CAN communication system or ITS communication system.

>> GO TO 6.

6.MALFUNCTIONING PART REPAIR

Repair or replace the identified malfunctioning parts.

>> GO TO 7.

7.REPAIR CHECK (SELF-DIAGNOSIS WITH CONSULT)

1. Erases self-diagnosis results.
2. Perform “All DTC Reading” again after repairing or replacing the specific items.
3. Check if any DTC is detected in self-diagnosis results of following.

- “ICC/ADAS”
- “LASER/RADAR”
- “ACCELE PEDAL ACT”

- “LANE CAMERA”
- “SIDE RADAR LEFT”
- “SIDE RADAR RIGHT”
- “BSW/BUZZER”

Is any DTC detected?

YES >> GO TO 5.
NO >> GO TO 8.

8. REPAIR CHECK (ACTION TEST)

Perform the Following system action test. Check that the malfunction symptom is solved or no other symptoms occur.

- DCA
- LDW/LDP
- Blind Spot Warning/Blind Spot Intervention
- BCI

Is there a malfunction symptom?

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

ADDITIONAL SERVICE WHEN REPLACING ICC SENSOR

Description

INFOID:0000000015260401

- Always perform the radar alignment aiming adjustment after removing and installing or replacing the ICC 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.

Work Procedure

INFOID:0000000015260402

1. RADAR ALIGNMENT ADJUSTMENT

Adjust the radar alignment.

>> GO TO 2.

2. ICC SYSTEM ACTION TEST

1. Perform the ICC system action test. Refer to CCS-102, "Description".
2. Check that the ICC system operates normally.

>> Inspection End.

ADDITIONAL SERVICE WHEN REPLACING LANE CAMERA UNIT

Description

INFOID:0000000015260399

Always perform the lane camera unit configuration and adjust the camera aiming after;
- Removing and installing the lane camera unit
- Replacing the lane camera unit
- Replacing windshield glass

Refer to BRC-281, "Work Procedure".

CAUTION:

The system does not operate normally unless the camera aiming adjustment is performed. Always perform it.

Work Procedure

INFOID:0000000015260400

1. LANE CAMERA UNIT CONFIGURATION

CONSULT

Perform lane camera unit configuration. Refer to BRC-290, "Description".

>> GO TO 2.

2. CAMERA AIMING ADJUSTMENT

CONSULT

Perform lane camera aiming adjustment. Refer to BRC-283, "Description".

>> GO TO 3.

3. PERFORM SELF-DIAGNOSIS

CONSULT

1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “LANE CAMERA”.
3. Check DTC.

Is any DTC detected?

YES >> Perform the trouble diagnosis for the detected DTC. Refer to DAS-292, "DTC Index".
NO >> GO TO 4.

4. PERFORM ACTION TEST

1. Perform the LDW/LDP system action test. Refer to DAS-331, "LDW/LDP : Description".
2. Check that the LDW and LDP systems operate normally.

>> Work End.

PRE-INSPECTION FOR DIAGNOSIS
LANE CAMERA UNIT

LANE CAMERA UNIT : Inspection Procedure

INFOID:0000000015259659

1.CHECK CAMERA LENS AND WINDSHIELD

Are camera lens and windshield contaminated with foreign materials?

YES >> Clean camera lens and windshield.
NO >> GO TO 2.

2.CHECK LANE CAMERA UNIT INSTALLATION CONDITION

Check lane camera unit installation condition (installation position, properly tightened, a bent bracket).

Is it properly installed?

YES >> GO TO 3.
NO >> Install lane camera unit properly, and perform camera aiming. Refer to DAS-322, "Description".

3.CHECK VEHICLE HEIGHT

Check vehicle height. Refer to FSU-28, "Wheelarch Height (Unladen*)".

Is vehicle height appropriate?

YES >> Inspection End.
NO >> Repair vehicle to appropriate height.

CAMERA AIMING ADJUSTMENT

Description

INFOID:0000000015260394

Always adjust the camera aiming after removing and installing or replacing the lane camera unit. Refer to BRC-283, "Work Procedure (Preparation)".

CAUTION:

- **Place the vehicle on level ground when the camera aiming adjustment is operated.**
- **Be sure to place the target correctly according to work procedures because the system may not operate normally.**
- **Follow the CONSULT when performing the camera aiming. (Camera aiming adjustment cannot be operated without CONSULT.)**

Work Procedure (Preparation)

INFOID:0000000015260395

1. PERFORM SELF-DIAGNOSIS

CONSULT
Select “Self Diagnostic Result” mode of “LANE CAMERA”.

Is any DTC detected?

Except “C1B01”>>Perform diagnosis on the detected DTC and repair or replace the applicable item. Refer to DAS-292, "DTC Index".

“C1B01” or no DTC>>GO TO 2.

2. PREPARATION BEFORE CAMERA AIMING ADJUSTMENT

1. Perform pre-inspection for diagnosis. Refer to DAS-321, "LANE CAMERA UNIT : Inspection Procedure".
2. Adjust the tire pressure to the specified pressure value.
3. Maintain no-load in vehicle.
4. Check if coolant and engine oil are filled up to correct level and fuel tank is full.
5. Shift the selector lever to “P” position and release the parking brake.
6. Clean the windshield.
7. Completely clear off the instrument panel.
   NOTE:
   If any fixed object is put on instrument panel, cover the upper of the instrument panel with black cloth to prevent an object from reflecting in the windshield.

>> GO TO 3.

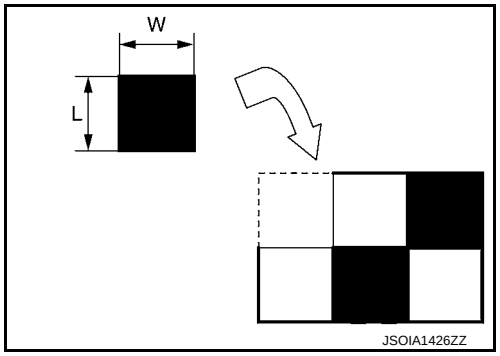
3. PREPARATION OF AIMING ADJUSTMENT JIG

Prepare the aiming adjustment jig according to the following procedure and the figure.

1. Prepare six sheets of white paper and black paper, respectively, with dimensions of 120 mm (4.72 in) × 120 mm (4.72 in) to create a left target and right target.
   NOTE:
   Correct the magnification of print and print the target mark sample in the service manual on the black paper. Refer to BRC-288, "Work Procedure (Target Mark Sample)".
2. Tape three sheets of black paper and three sheets of white paper together to make a target of 360 mm (14.17 in) × 240 mm (9.45 in).

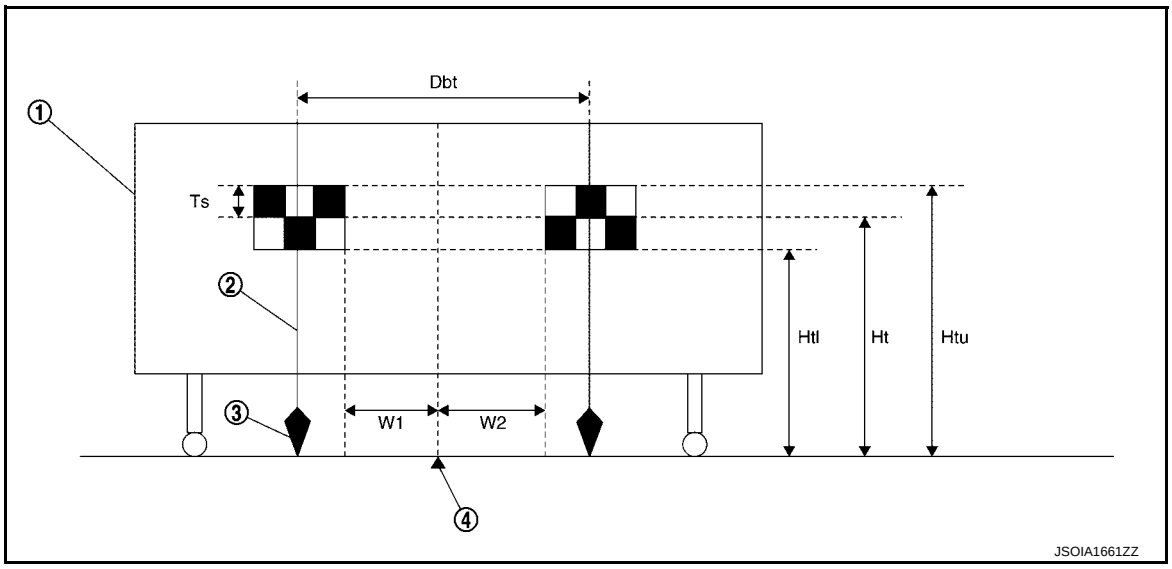
   L : 120 mm (4.72 in)
   W : 120 mm (4.72 in)

   NOTE:
   - Use a transparent tape.
   - Never apply tape to target surface.
   - Never allow a clearance on the black and white boundary.



3. Stick a printed target mark on the board with a scotch tape or a piece of double-sided tape.
   NOTE:
   - Use the board that peripheral area of the target is monochrome such as a white-board.

- Notice that the cross of the target is horizontal and vertical.



① Board ② String ③ Cone
④ Center between two targets

Side of a target (Ts)	**: 120 mm (4.72 in)**
Height of a target lower end (Htl)	**: 1,180 mm (46.46 in)**
Height of a target center (Ht)	**: 1,300 mm (51.18 in)**
Height of a target upper end (Htu)	**: 1,420 mm (55.91 in)**
Width between a right target center from a left target center (Dbt)	**: 720 mm (28.35 in)**
W1	**: 180 mm (7.09 in)**
W2	**: 180 mm (7.09 in)**

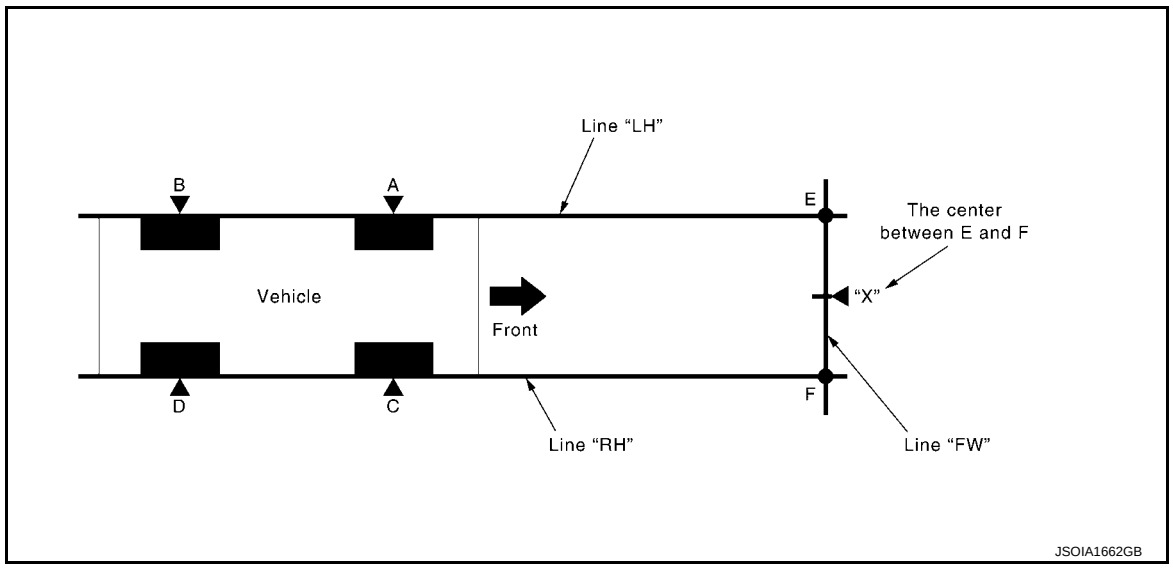
>> Proceed to BRC-284, "Work Procedure (Target Setting)".

Work Procedure (Target Setting)

INFOID:0000000015260396

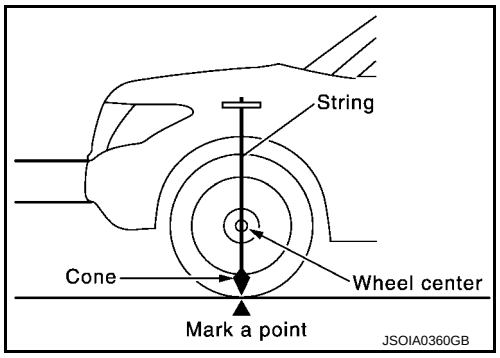
CAUTION:
- **Be sure to place the target correctly according to work procedures because the system may not operate normally.**
- **Perform this operation in a horizontal position where there is a clear view for 5 m (16.4 ft) forward and 3 m (9.84 ft) wide.**
- **Place the target in a well-lighted location. (Poor lighting may make it hard to adjust.)**
- **The target may not be detected when there is a light source within 1.5 m (4.92 ft) from either side and within 1 m (3.28 ft) upward/downward from the target.**
- **Check the location of the sun. (Sunlight should not shine directly on the front of the vehicle.)**
- **The target may not be detected when there is the same pattern of black and white as the target when the pattern is within 1 m (3.28 ft) from either side and upward/downward position from the target. (It is desirable that the vehicle is positioned on the opposite side of a single-color wall.)**

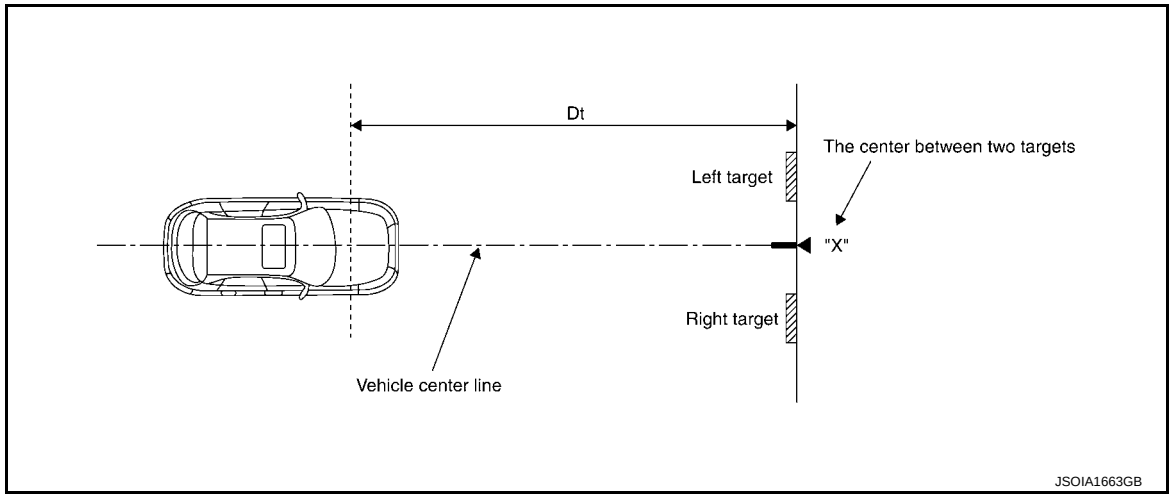
1. TARGET SETTING



A – E (C – F) : 3,000 mm (118.11 in)

1. Mark points “A”, “B”, “C” and “D”at the center of the lateral surface of each wheels.
   NOTE:
   Hang a string with a cone from the fender so as to pass through the center of wheel, and then mark a point at the center of the lateral surface of the wheel.
2. Draw line “LH” passing through points “A” and “B” on the left side of vehicle.
   NOTE:
   Approximately 4 m (13.12 ft) or more from the front end of vehicle.
3. Mark point “E” on the line “LH” at the positions 3,000 mm (118.11 in) from point “A”.
4. Draw line “RH” passing through points “C” and “D” on the right side of vehicle in the same way as step 2.
   NOTE:
   Approximately 4 m (13.12 ft) or more from the front end of vehicle.
5. Mark point “F” on the line “RH” at the positions 3,000 mm (118.11 in) from point “C”.
6. Draw line “FW” passing through the points “E” and “F” on the front side of vehicle.
7. Mark point “X” at the center of point “E” and “F” on the line “FW”.
   CAUTION:
   Make sure that “E” to “X” is equal to “F” to “X”.
8. Place a target on either side of point “X”. Each distance from point “X” must be equal each other.





Dt : 3,000 mm (118.11 in)

>> Proceed to BRC-286, "Work Procedure (Camera Aiming Adjustment)".

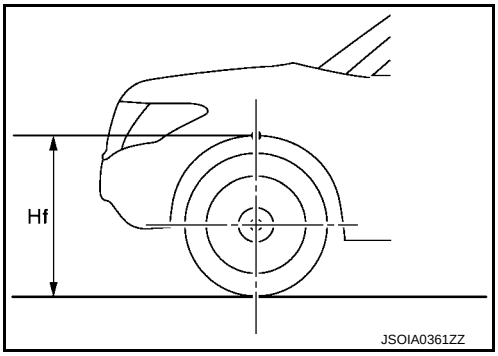
Work Procedure (Camera Aiming Adjustment)

INFOID:0000000015260397

CAUTION:
Perform the adjustment under unloaded vehicle condition.

1. CHECK VEHICLE HEIGHT

Measure the wheelarch height. Calculate “Dh”.



Dh [mm] = (Hfl + Hfr) ÷ 2 – 790
Hfl: Front left wheelarch height [mm]
Hfr: Front right wheelarch height [mm]

CAUTION:
Be sure to measure wheelarch height correctly.
NOTE:
“Dh” may be calculated as a minus value.

>> GO TO 2.

2. CAMERA AIMING ADJUSTMENT

CONSULT
CAUTION:
Operate CONSULT outside the vehicle, and close all the doors. (To retain vehicle attitude appropriately)

1. Select “Work Support” on “LANE CAMERA” with CONSULT.
2. Select “AUTO AIM”.
3. Confirm the following items;
- The target should be accurately placed.
- The vehicle should be stopped.
4. Select “CHANGE SET” to perform camera aiming.
   CAUTION:
   - **Never select “CHANGE SET” when the target is not accurately placed.**
   - **Wait 5 seconds or more after selecting “CHANGE SET”.**
5. Input “Dh”.
6. Input the following parameters, and then select “CHANGE SET”.

Htu	**: 1,420 mm**
Htl	**: 1,180 mm**
Dt	**: 3,000 mm**
Ts	**: 120 mm**
Dbt	**: 720 mm**
VP	**: 0**

7. Confirm the displayed item.
- “Normally Completed”: Select “Completion”.
- “SUSPENSION”, “ABNORMALLY COMPLETED”: Perform the following services.

Displayed item		Possible cause	Service procedure
SUSPENSION	—	Temporary malfunction in internal processing of the lane camera unit.	Go back to step 1.
	00H Routine not activated	Lane camera unit malfunction.	Position the target appropriately again. Then perform the aiming again.
	10H Writing error	• Temporary malfunction in internal processing of the lane camera unit. • Lane camera unit malfunction.	
ABNORMALLY COMPLETED	2	Lane camera unit cannot detect the target • A target is not-yet-placed. • The position of the targets is not correct. • The position of the lane camera unit is not correct. • Inappropriate work environment. • Inappropriate vehicle condition. • Input value is not correct against actual setting position.	Position the target appropriately again. Then perform the aiming again.
	3	Roll angle is outside the threshold • The position of the targets is not correct. • The position of the lane camera unit is not correct. • Inappropriate work environment. • Inappropriate vehicle condition. • Input value is not correct against actual setting position.	
	4	Yaw/pitch angle is outside the threshold. • The position of the targets is not correct. • The position of the lane camera unit is not correct. • Inappropriate work environment. • Inappropriate vehicle condition. • Input value is not correct against actual setting position.	
	13	Waiting for the start or aiming. (Insufficient passage of time from key SW ON to the start of aiming.) • Inappropriate work environment.	
	14	Configuration of the lane camera unit is not completed.	Complete the configuration of the lane camera unit. Refer to BRC-290, "Description". Then turn the ignition switch OFF→ON Then position the target appropriately again.
		Ignition switch is not turned OFF→ON after the configuration of the lane camera unit is completed.	Turn the ignition switch OFF→ON. Then position the target appropriately again.

NOTE:
Replace lane camera unit if “00H Routine not activated” or “10H Writing error” are repeatedly indicated during the above two services are performed.

8. Confirm that “Normally completed” is displayed and then select “End” to close the adjustment procedure.

>> GO TO 3.

3. PERFORM SELF-DIAGNOSIS

With CONSULT
Perform self-diagnosis of “LANE CAMERA” with CONSULT.

Is any DTC detected?

YES >> Perform diagnosis on the detected DTC and repair or replace the applicable item. Refer to DAS-292, "DTC Index".
NO >> GO TO 4.

4. ACTION TEST

Perform the LDW/LDP system action test. Refer to DAS-331, "LDW/LDP : Description".

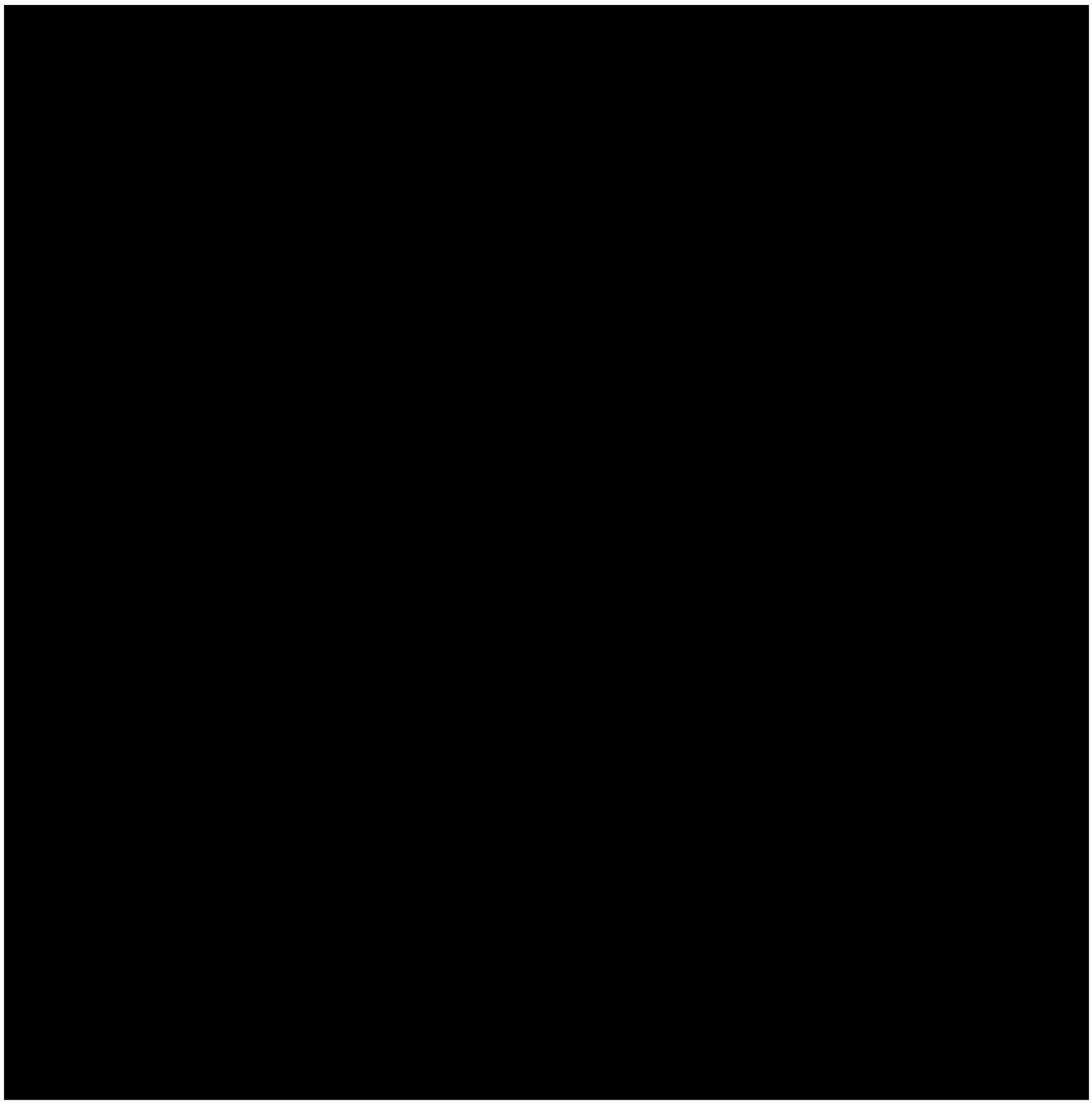
>> Work End.

Work Procedure (Target Mark Sample)

INFOID:0000000015260398

NOTE:

Change the magnification of print to 120 mm (4.72 in) × 120 mm (4.72 in) and print the target mark sample.



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CONFIGURATION (LANE CAMERA UNIT)

Description

INFOID:0000000015260392

- Since vehicle specifications are not included in the lane camera unit after replacement, it is required to write vehicle specifications with CONSULT. Refer to BRC-290, "Work Procedure".
- Configuration has three functions as follows.

Function		Description
Read/Write Configuration	Before Replace ECU	Allows the reading of vehicle specification written in lane camera unit to store the specification in CONSULT.
	After Replace ECU	Allows the writing of the vehicle information stored in CONSULT into the lane camera unit.
Manual Configuration		Allows the writing of the vehicle specification into the lane camera unit by hand.

Work Procedure

INFOID:0000000015260393

1.SAVING VEHICLE SPECIFICATION

CONSULT
Select “READ CONFIGURATION” to save or print current vehicle specification.

Is vehicle specification saved normally?

YES >> GO TO 2.
NO >> GO TO 4.

2.REPLACE LANE CAMERA UNIT

Replace lane camera unit. Refer to DAS-410, "Removal and Installation".

>> GO TO 3.

3.WRITING VEHICLE SPECIFICATION

CONSULT
Select “WRITE CONFIGURATION - Config file” to write vehicle specification.

>> GO TO 6.

4.REPLACE LANE CAMERA UNIT

Replace lane camera unit. Refer to DAS-410, "Removal and Installation".

>> GO TO 5.

5.WRITING VEHICLE SPECIFICATION

CONSULT
1. Select “WRITE CONFIGURATION - Manual selection”
2. Touch “Next”.
3. Touch “OK”.
4. Check that the configuration has been successfully written and touch “End”.

>> GO TO 6.

6.OPERATION CHECK

Confirm that LDW/LDP systems operate normally. Refer to DAS-331, "LDW/LDP : Description".

>> Work End.

DTC/CIRCUIT DIAGNOSIS

C1B00 CAMERA UNIT MALF

LANE CAMERA UNIT

LANE CAMERA UNIT : DTC Description

INFOID:0000000015259800

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
C1B00-4B	CAMERA UNIT MALF (Camera unit malfunction)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	-
		Threshold	Temperature around lane camera unit is excessively high. (Above 100°C)
		Diagnosis delay time	5 seconds or more
C1B00-04,41,44,45,46,47,48,49,52,56,57,87	CAMERA UNIT MALF (Camera unit malfunction)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	-
		Threshold	• Configuration of the lane camera unit is not completed. • If lane camera unit is malfunctioning
		Diagnosis delay time	5 seconds or more

POSSIBLE CAUSE

- Interior room temperature is excessively high.
- Configuration of the lane camera unit is not completed.
- Lane camera

FAIL-SAFE

The following systems are canceled:

- Lane Departure Warning (LDW)
- Lane Departure Prevention (LDP)
- Forward Emergency Braking (FEB) with pedestrian
- Forward Emergency Braking (FEB)

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

CONSULT

1. Start the engine.
2. Select “All DTC Reading” mode.
3. Check “Self Diagnostic Result” mode of “LANE CAMERA”.

Is DTC detected?

YES-1 >> DTC “C1B00-4B”: Refer to BRC-291, "LANE CAMERA UNIT : Diagnosis Procedure (C1B00-4B)".
YES-2 >> DTC “C1B00-04,41,44,45,46,47,48,49,52,56,57,87,”: Refer to BRC-292, "LANE CAMERA UNIT : Diagnosis Procedure (C1B00-04,41,44,45,46,47,48,49,52,56,57,87)".
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

LANE CAMERA UNIT : Diagnosis Procedure (C1B00-4B)

INFOID:0000000015259801

1. COOLING LANE CAMERA UNIT AND ERASE DTC

CONSULT

1. Wait for 10 minutes or more to cool the lane camera unit.
2. Select “Self Diagnostic Result” mode of “LANE CAMERA”.
3. Erase DTC and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to BRC-291, "LANE CAMERA UNIT : DTC Description".

Is “C1B00-4B” detected?

YES >> Replace the lane camera unit. Refer to DAS-410, "Removal and Installation".
NO >> Inspection End.

LANE CAMERA UNIT : Diagnosis Procedure (C1B00-04,41,44,45,46,47,48,49,52,56,57,87)

INFOID:0000000015259802

1.CHECK SELF-DIAGNOSIS RESULTS

CONSULT
Check if any DTC other than “C1B00-04,41,44,45,46,47,48,49,52,56,57,87” is detected in “Self Diagnostic Result” of mode “LANE CAMERA”.

Is any DTC detected?

YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. Refer to DAS-292, "DTC Index".
NO >> Replace the lane camera unit. Refer to DAS-410, "Removal and Installation".

C1B01 CAM AIMING INCMP

LANE CAMERA UNIT

LANE CAMERA UNIT : DTC Description

INFOID:0000000015259803

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
C1B01-54	CAM AIMING INCMP (Camera aiming incomplete)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	-
		Threshold	Camera aiming is not completed
		Diagnosis delay time	5 seconds or more

POSSIBLE CAUSE

- Lane camera aiming is not adjusted
- Lane camera aiming adjustment has been interrupted

FAIL-SAFE

The following systems are canceled:

- Lane Departure Warning (LDW)
- Lane Departure Prevention (LDP)
- Forward Emergency Braking (FEB) with pedestrian
- Forward Emergency Braking (FEB)

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

Ⓟ CONSULT

1. Start the engine.
2. Select “All DTC Reading” mode.
3. Check if “C1B01-54” is detected as the current malfunction in “Self Diagnostic Result” mode of “LANE CAMERA”.

Is “C1B01-54” detected as the current malfunction?

YES >> Refer to BRC-293, "LANE CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

LANE CAMERA UNIT : Diagnosis Procedure

INFOID:0000000015259804

1. CAMERA AIMING ADJUSTMENT

1. Perform the camera aiming. Refer to DAS-322, "Description".
2. Erase DTC and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to BRC-293, "LANE CAMERA UNIT : DTC Description".

Is “C1B01-54” detected?

YES >> Replace the lane camera unit. Refer to DAS-410, "Removal and Installation".
NO >> Inspection End.

C1B03 ABNRML TEMP DETECT
LANE CAMERA UNIT
LANE CAMERA UNIT : DTC Logic

INFOID:0000000014895500

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition
C1B03	ABNRML TEMP DETECT (Abnormal temperature detect)	Temperature around lane camera unit is excessively high

POSSIBLE CAUSE
Interior room temperature is excessively high

FAIL-SAFE
The following systems are canceled.
- Lane Departure Warning (LDW)/Lane Departure Prevention (LDP)
- Blind Spot Warning (BSW)/Blind Spot Intervention

DTC CONFIRMATION PROCEDURE
1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT
1. Start the engine.
2. Select “All DTC Reading”.
3. Check if the “C1B03” is detected as the current malfunction in “Self Diagnostic Result” of “LANE CAMERA”.

Is “C1B03” detected as the current malfunction?

YES >> Refer to BRC-294, "LANE CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End

LANE CAMERA UNIT : Diagnosis Procedure

INFOID:0000000014895501

1.COOLING LANE CAMERA UNIT

CONSULT
1. Wait for 10 minutes or more to cool the lane camera unit.
2. Erase all “Self Diagnostic Result”.
3. Select “All DTC Reading”.
4. Check if the “C1B03” is detected in “Self Diagnostic Result” of “LANE CAMERA”.

Is “C1B03” detected?

YES >> Replace the lane camera unit. Refer to DAS-410, "Removal and Installation".
NO >> Inspection End.

ADAS CONTROL UNIT
ADAS CONTROL UNIT : DTC Description

INFOID:0000000015259817

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
C1B03	CAM ABNRML TMP DETCT (Camera abnormal temperature detect)	Diagnosis condition	When Ignition switch is ON.
		Signal (terminal)	–
		Threshold	Temperature around lane camera unit is excessively high
		Diagnosis delay time	–

POSSIBLE CAUSE
Interior room temperature is excessively high

FAIL-SAFE
The following systems are canceled:
- Lane Departure Warning (LDW)/Lane Departure Prevention (LDP)
- Blind Spot Warning (BSW)

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT
1. Start the engine.
2. Turn the LDP system ON.
3. Select “All DTC Reading” mode.
4. Check if “C1B03” is detected as the current malfunction in “Self Diagnostic Result” mode of “ICC/ADAS”.

Is “C1B03” detected as the current malfunction?

YES >> Refer to BRC-295, "ADAS CONTROL UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

ADAS CONTROL UNIT : Diagnosis Procedure

INFOID:0000000015259818

1.CHECK LANE CAMERA UNIT SELF-DIAGNOSIS RESULTS

CONSULT
1. Select “All DTC Reading” mode.
2. Check if “C1B03” is detected in “Self Diagnostic Result” mode of “LANE CAMERA”

Is “C1B03” detected?

YES >> Refer to DAS-292, "DTC Index"
NO >> GO TO 2.

2.CHECK ADAS CONTROL UNIT SELF-DIAGNOSIS RESULTS

1. Select Erase “All DTC Reading” mode.
2. Select “All DTC Reading” mode.
3. Check if “C1B03” is detected in “Self Diagnostic Result” mode of “ICC/ADAS”

Is “C1B03” detected?

YES >> Replace the ADAS control unit. Refer to DAS-210, "Removal and Installation".
NO >> Inspection End.

ADAS CONTROL UNIT 2

ADAS CONTROL UNIT 2 : DTC Description

INFOID:0000000015259819

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
C1B03	CAM ABNRML TMP DETCT (Camera abnormal temperature detect)	Diagnosis condition	When Ignition switch is ON.
		Signal (terminal)	–
		Threshold	Temperature around lane camera unit is excessively high
		Diagnosis delay time	–

POSSIBLE CAUSE
Interior room temperature is excessively high

FAIL-SAFE
The following systems are canceled:
- Lane Departure Warning (LDW)/Lane Departure Prevention (LDP)

- Blind Spot Warning (BSW)

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

CONSULT
1. Start the engine.
2. Turn the LDP system ON.
3. Select “All DTC Reading” mode.
4. Check if “C1B03” is detected as the current malfunction in “Self Diagnostic Result” mode of “ICC/ADAS 2”.

Is “C1A39” detected as the current malfunction?

YES >> Refer to BRC-296, "ADAS CONTROL UNIT 2 : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

ADAS CONTROL UNIT 2 : Diagnosis Procedure

INFOID:0000000015259820

1. CHECK LANE CAMERA UNIT SELF-DIAGNOSIS RESULTS

CONSULT
1. Select “All DTC Reading” mode.
2. Check if “C1B03” is detected in “Self Diagnostic Result” mode of “LANE CAMERA”

Is “C1B03” detected?

YES >> Refer to DAS-292, "DTC Index"
NO >> GO TO 2.

2. CHECK ADAS CONTROL UNIT 2 SELF-DIAGNOSIS RESULTS

1. Select Erase “Self Diagnostic Results” mode.
2. Select “All DTC Reading” mode.
3. Check if “C1B03” is detected in “Self Diagnostic Result” mode of “ICC/ADAS”

Is “C1B03” detected?

YES >> Replace the ADAS control unit. Refer to DAS-210, "Removal and Installation".
NO >> Inspection End.

C1B09 POWER SUPPLY CIRCUIT

DTC Description

INFOID:0000000015259805

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
C1B09-17	POWER SUPPLY CIRCUIT (Power supply circuit)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	-
		Threshold	Lane camera unit ignition voltage is greater than 16V
		Diagnosis delay time	5 seconds or more
C1B0A-16	POWER SUPPLY CIRCUIT2 (Power supply circuit)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	-
		Threshold	Lane camera unit ignition voltage is less than 10.5V
		Diagnosis delay time	5 seconds or more

POSSIBLE CAUSE

- Harness, connector or fuse
- Lane camera unit
- Power supply circuit

FAIL-SAFE

The following systems are canceled:

- Lane Departure Warning (LDW)
- Lane Departure Prevention (LDP)
- Forward Emergency Braking (FEB) with pedestrian
- Forward Emergency Braking (FEB)

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

CONSULT

1. Start the engine.
2. Select “All DTC Reading” mode.
3. Check if “C1B09-17” or “C1B0A-16” is detected as the current malfunction on the “Self Diagnostic Result” mode of “LANE CAMERA”.

Are “C1B09-17” or “C1B0A-16” detected as the current malfunction?

YES >> Refer to BRC-297, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000015259806

1. CHECK LANE CAMERA UNIT SUPPLY AND GROUND CIRCUIT

Check power supply and ground circuit of lane camera unit. Refer to DAS-377, "LANE CAMERA UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES >> Replace the lane camera unit. Refer to DAS-410, "Removal and Installation".
NO >> Repair or replace harness or connectors.

U1000 CAN COMM CIRCUIT
LANE CAMERA UNIT
LANE CAMERA UNIT : Description

INFOID:0000000015259807

ITS COMMUNICATION
- ITS communication is a multiplex communication system. This enables the system to transmit and receive large quantities of data at high speed by connecting control units with 2 communication lines.
- ITS communication lines adopt twisted-pair line style (two lines twisted) for noise immunity.

LANE CAMERA UNIT : DTC Description

INFOID:0000000015259808

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
U1000-01	CAN COMM CIRCUIT (CAN communication circuit)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	-
		Threshold	If lane camera unit is not transmitting or receiving ITS communication signal for 2 seconds or more
		Diagnosis delay time	5 seconds or more

POSSIBLE CAUSE
ITS communication system

FAIL-SAFE
The following systems are canceled:
- Lane Departure Warning (LDW)
- Lane Departure Prevention (LDP)
- Forward Emergency Braking (FEB) with pedestrian
- Forward Emergency Braking (FEB)

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT
1. Start the engine.
2. Turn the FEB or LDW system ON.
3. Select “All DTC Reading” mode.
4. Check if “U1000-01” is detected as the current malfunction in “Self Diagnostic Result” mode of “LANE CAMERA”.

Is “U1000-01” detected as the current malfunction?

YES >> Refer to BRC-298, "LANE CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

LANE CAMERA UNIT : Diagnosis Procedure

INFOID:0000000015259809

1.PERFORM THE SELF-DIAGNOSIS

CONSULT
1. Turn the ignition switch ON.
2. Turn the FEB or LDW system ON.
3. Select “All DTC Reading” mode.
4. Check if “U1000-01” is detected as the current malfunction in “Self Diagnostic Result” mode of “LANE CAMERA”.

Is “U1000-01” detected as the current malfunction?

YES >> Refer to LAN-26, "Trouble Diagnosis Flow Chart".
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

U1010 CONTROL UNIT (CAN)
LANE CAMERA UNIT

LANE CAMERA UNIT : Description

INFOID:0000000015259810

CAN controller controls the communication of ITS communication signal and the error detection.

LANE CAMERA UNIT : DTC Description

INFOID:0000000015259811

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
U1010-49	CONTROL UNIT (CAN) [Control unit (CAN)]	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	-
		Threshold	If lane camera unit detects malfunction by CAN controller initial diagnosis
		Diagnosis delay time	5 seconds or more

POSSIBLE CAUSE
Lane camera unit

FAIL-SAFE
The following systems are canceled:
- Lane Departure Warning (LDW)
- Lane Departure Prevention (LDP)
- Forward Emergency Braking (FEB) with pedestrian
- Forward Emergency Braking (FEB)

DTC CONFIRMATION PROCEDURE
1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT
1. Start the engine.
2. Turn the FEB or LDW system ON.
3. Select “All DTC Reading” mode.
4. Check if “U1010-49” is detected as the current malfunction in “Self Diagnostic Result” mode of “LANE CAMERA”.

Is “U1010-49” detected as the current malfunction?

YES >> Refer to BRC-300, "LANE CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

LANE CAMERA UNIT : Diagnosis Procedure

INFOID:0000000015259812

1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT
1. Turn the FEB or LDW system ON.
2. Select “All DTC Reading” mode.
3. Check if “U1010-49” is detected as the current malfunction in “Self Diagnostic Result” mode of “LANE CAMERA”.

Is “U1010-49” detected as the current malfunction?

YES >> Replace the lane camera unit. Refer to DAS-410, "Removal and Installation".
NO >> Inspection End.

U0104 ADAS CAN 1
LANE CAMERA UNIT

LANE CAMERA UNIT : DTC Description

INFOID:0000000015266961

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
U0104-00	ADAS CAN CIRC 1 (ADAS control unit CAN circuit 1)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	-
		Threshold	If lane camera unit detects an error signal that is received from ADAS control unit or ADAS control unit2 via CAN communication
		Diagnosis delay time	5 seconds or more

POSSIBLE CAUSE
- ADAS control unit
- ADAS control unit 2

FAIL-SAFE
The following systems are canceled:
- Lane Departure Warning (LDW)
- Lane Departure Prevention (LDP)
- Forward Emergency Braking (FEB) with pedestrian
- Forward Emergency Braking (FEB)

DTC CONFIRMATION PROCEDURE
1.CHECK DTC PRIORITY
If DTC “U0104-00” is displayed with DTC “U1000-01”, first diagnose the DTC “U1000-01”.

Is applicable DTC detected?

YES >> Perform diagnosis of applicable. Refer to DAS-363, "LANE CAMERA UNIT : DTC Description".
NO >> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE
CONSULT
1. Start the engine.
2. Turn the FEB or LDW system ON.
3. Select “All DTC Reading” mode.
4. Check if “U0104-00” is detected as the current malfunction in “Self Diagnostic Result” mode of “LANE CAMERA”.

Is “U0104-00” detected as the current malfunction?

YES >> Refer to BRC-301, "LANE CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

LANE CAMERA UNIT : Diagnosis Procedure

INFOID:0000000015266962

1.CHECK DTC PRIORITY
If DTC “U0104-00” is displayed with DTC “U1000-01”, first diagnose the DTC “U1000-01”.

Is applicable DTC detected?

YES >> Perform diagnosis of applicable. Refer to DAS-363, "LANE CAMERA UNIT : DTC Description".
NO >> GO TO 2.

2.CHECK ADAS CONTROL UNIT SELF-DIAGNOSIS RESULTS

CONSULT
Check if any DTC is detected in “Self Diagnostic Result” mode of “ICC/ADAS and ICC/ADAS2”.

Is any DTC detected?

YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. Refer to DAS-271, "DTC Index" (ADAS Control unit) and DAS-277, "DTC Index" (ADAS Control unit 2).

NO >> Replace the lane camera unit. Refer to DAS-410, "Removal and Installation".

U0126 STRG SEN CAN 1
LANE CAMERA UNIT

LANE CAMERA UNIT : DTC Description

INFOID:0000000015259813

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
U0126-00	STRG SEN CAN CIR1 (Steering angle sensor CAN circuit1)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	-
		Threshold	If lane camera unit detects an error signal that is received from steering angle sensor via chassis communication
		Diagnosis delay time	5 seconds or more

POSSIBLE CAUSE
Steering angle sensor

FAIL-SAFE
The following systems are canceled:
- Lane Departure Warning (LDW)
- Lane Departure Prevention (LDP)
- Forward Emergency Braking (FEB) with pedestrian
- Forward Emergency Braking (FEB)

DTC CONFIRMATION PROCEDURE
1.CHECK DTC PRIORITY
If DTC “U0126” is displayed with DTC “U1000-01”, first diagnose the DTC “U1000-01”.

Is applicable DTC detected?

YES >> Perform diagnosis of applicable. Refer to BRC-298, "LANE CAMERA UNIT : DTC Description".
NO >> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE
CONSULT
1. Start the engine.
2. Turn the FEB or LDW system ON.
3. Select “All DTC Reading” mode.
4. Check if the “U0126-00” is detected as the current malfunction in “Self Diagnostic Result” mode of “LANE CAMERA”.

Is “U0126” detected as the current malfunction?

YES >> Refer to BRC-303, "LANE CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

LANE CAMERA UNIT : Diagnosis Procedure

INFOID:0000000015259814

1.CHECK DTC PRIORITY
If DTC “U0126-00” is displayed with DTC “U1000-01”, first diagnose the DTC “U1000-01”.

Is applicable DTC detected?

YES >> Perform diagnosis of applicable. Refer to BRC-298, "LANE CAMERA UNIT : DTC Description".
NO >> GO TO 2.

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

CONSULT
Check if any DTC is detected in “Self Diagnostic Result” mode of “ABS”.

Is any DTC detected?

YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. Refer to BRC-61, "DTC Index".

NO >> Replace the lane camera unit. Refer to DAS-410, "Removal and Installation".

U0405 ADAS CAN 2
LANE CAMERA UNIT

LANE CAMERA UNIT : DTC Description

INFOID:0000000015259815

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
U0405-83	ADAS CAN CIR2 (ADAS control unit CAN circuit 2)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	-
		Threshold	If lane camera unit detects an error signal that is received from ADAS control unit or ADAS control unit 2 can communication.
		Diagnosis delay time	5 seconds or more

POSSIBLE CAUSE
ADAS control unit
ADAS control unit 2

FAIL-SAFE
The following systems are canceled:
- Lane Departure Warning (LDW)
- Lane Departure Prevention (LDP)
- Forward Emergency Braking (FEB) with pedestrian
- Forward Emergency Braking (FEB)

DTC CONFIRMATION PROCEDURE
1.CHECK DTC PRIORITY
If DTC “U0405-83” is displayed with DTC “U1000-01”, first diagnose the DTC “U1000-01”.

Is applicable DTC detected?

YES >> Perform diagnosis of applicable. Refer to BRC-298, "LANE CAMERA UNIT : DTC Description".
NO >> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE
CONSULT
1. Start the engine.
2. Turn the FEB or LDW system ON.
3. Select “All DTC Reading” mode.
4. Check if U0405-83 is detected as the current malfunction in “Self Diagnostic Result” mode of “LANE CAMERA”.

Is DTC “U0405-83” detected?

YES >> Refer to BRC-305, "LANE CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

LANE CAMERA UNIT : Diagnosis Procedure

INFOID:0000000015259816

1.CHECK DTC PRIORITY
If DTC “U0405-83” is displayed with DTC “U1000-01”, first diagnose the DTC “U1000-01”.

Is applicable DTC detected?

YES >> Perform diagnosis of applicable. Refer to BRC-298, "LANE CAMERA UNIT : DTC Description".
NO >> GO TO 2.

2.CHECK ADAS CONTROL UNIT SELF-DIAGNOSIS RESULTS

CONSULT
Check if any DTC is detected in “Self Diagnostic Result” mode of “ICC/ADAS” and “ICC/ADAS2”.

Is any DTC detected?

YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. Refer to DAS-271, "DTC Index" (ADAS control unit) and DAS-277, "DTC Index" (ADAS control unit 2).

NO >> Replace lane camera unit. Refer to DAS-410, "Removal and Installation".

U0428 STRG SEN CAN 2
LANE CAMERA UNIT

LANE CAMERA UNIT : DTC Description

INFOID:0000000015259823

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
U0428-83	STRG SEN CAN CIR2 (Steering angle sensor CAN circuit2)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	-
		Threshold	Lane camera unit receives an error signal from steering angle sensor via chassis control
		Diagnosis delay time	5 seconds or more

POSSIBLE CAUSE
Steering angle sensor

FAIL-SAFE
The following systems are canceled.
- Lane Departure Warning (LDW)
- Lane Departure Prevention (LDP)
- Forward Emergency Braking (FEB) with pedestrian
- Forward Emergency Braking (FEB)

DTC CONFIRMATION PROCEDURE

1.CHECK DTC PRIORITY

If DTC “U0428-83” is displayed with DTC “U1000-01”, first diagnose the DTC “U1000-01”.

Is applicable DTC detected?

YES >> Perform diagnosis of applicable. Refer to DAS-363, "LANE CAMERA UNIT : DTC Description".
NO >> GO TO 2.

2.PERFORM DTC COMFIRMATION PROCEDURE

CONSULT
1. Start the engine.
2. Turn the FEB or LDW system ON.
3. Select “All DTC Reading” mode.
4. Check if “U0428-83” is detected as the current malfunction in “Self Diagnostic Result” mode of “LANE CAMERA”.

Is “U0428-83” detected as the current malfunction?

YES >> Refer to BRC-307, "LANE CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

LANE CAMERA UNIT : Diagnosis Procedure

INFOID:0000000015259824

1.CHECK DTC PRIORITY

If DTC “U0428-83” is displayed with DTC “U1000”, first diagnose the DTC “U1000”.

Is applicable DTC detected?

YES >> Perform diagnosis of applicable. Refer to DAS-363, "LANE CAMERA UNIT : DTC Description".
NO >> GO TO 2.

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

CONSULT

Check if any DTC is detected in “Self Diagnostic Result” mode of “ABS”.

Is any DTC detected?

YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. Refer to BRC-61, "DTC Index".

NO >> Replace the lane camera unit. Refer to DAS-410, "Removal and Installation".

POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:0000000015259668

Regarding Wiring Diagram information, refer to DAS-302, "Wiring Diagram".

1.CHECK FUSES

Check that the following fuse is not blown.

Signal name	Fuse No.
Ignition power supply	30 (10A)

Is the fuse blown?

YES >> Replace the blown fuse after repairing the affected circuit.
NO >> GO TO 2.

2.CHECK LANE CAMERA UNIT POWER SUPPLY CIRCUIT

Check voltage between lane camera unit harness connector and ground.

Terminal			Condition	Voltage (Approx.)
(+)		(–)		
Lane camera unit		Ground	Ignition switch	
Connector	Terminal			
R17	3		OFF	0 V
			ON	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the lane camera unit power supply circuit.

3.CHECK LANE CAMERA UNIT GROUND CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect the lane camera unit connector.
3. Check for continuity between lane camera unit harness connector and ground.

Lane camera unit		Ground	Continuity
Connector	Terminal		
R17	1		Yes

Is the inspection result normal?

YES >> Inspection End.
NO >> Repair the lane camera unit ground circuit.

FORWARD EMERGENCY BRAKING

Diagnosis Procedure

INFOID:0000000014895545

1.FORWARD EMERGENCY BRAKE DIAGNOSIS

- 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 CCS-92, "Work Flow".

SYMPTOM DIAGNOSIS

SYSTEM SETTINGS CANNOT BE TURNED ON/OFF ON THE INTEGRAL SWITCH

Symptom Table

INFOID:0000000014895546

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 turn ON/OFF	FEB warning lamp is not turned ON⇔OFF when operating integral switch	BRC-311, "Diagnosis Procedure"

Description

INFOID:0000000014895547

FEB system does not turn ON/OFF.
- FEB warning lamp does not illuminate even if the integral switch is operated when FEB warning lamp is not illuminated.
- FEB warning lamp does not turn off even if the integral switch is operated when FEB warning lamp is illuminated.

NOTE:
The system ON/OFF condition will be memorized even if the ignition switch turns OFF.

Diagnosis Procedure

INFOID:0000000014895548

1. PERFORM SELF DIAGNOSTIC RESULT (LASER/RADAR)

CONSULT
1. Select “Self Diagnostic Result” mode of “ICC/ADAS”.
2. Check if the DTC is detected in “Self Diagnostic Result” mode of “ICC/ADAS”. Refer to CCS-80, "DTC Index".

Is any DTC detected?

YES >> GO TO 9.
NO >> GO TO 2.

2. STEERING SWITCH INSPECTION

CONSULT
1. Start the engine.
2. Check that “FEB SELECT” operates normally in “Data Monitor” of “LASER/RADAR”.

Is inspection result normal?

YES >> GO TO 6.
NO >> GO TO 3.

3. CHECK STEERING SWITCH RESISTANCE

Check resistance between the following steering switch terminals:

Steering switches			Condition	Resistance (Ω) (Approx.)
Terminal		Signal name		
25	19	Display	Depress ▷ switch.	2023
		Back	Depress ◁ switch.	723
18		Enter	Depress OK switch.	2023
		Menu Up	Depress △ switch.	121
		Menu Down	Depress ▽ switch.	321

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace steering wheel switch. Refer to CCS-208, "Removal and Installation".

4.CHECK SPIRAL CABLE

Check continuity between the following spiral cable terminals:

Spiral cable		Continuity
Terminal		
8	25	Yes
14	19	
15	18	

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace spiral cable. Refer to SR-16, "Removal and Installation".

5.CHECK STEERING SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect combination meter harness connector M76 and spiral cable harness connector M30.
3. Check continuity between combination meter harness connector M76 and spiral cable harness connector M30.

Combination meter		Spiral cable		Continuity
Connector	Terminal	Connector	Terminal	
M76	21	M30	14	Yes
	22		8	
	23		15	

4. Check continuity between combination meter harness connector M76 and ground.

Combination meter		Ground	Continuity
Connector	Terminal		
M76	21	Ground	No
	22		
	23		

Is the inspection result normal?

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

6.PERFORM THE DIAGNOSTIC RESULT (METER/M&A)

(E)CONSULT
1. Select “Self Diagnostic Result” mode of “METER/M&A”.
2. Check if the DTC is detected in “Self Diagnostic Result” mode of “METER/M&A”. Refer to MWI-32, "DTC Index".

Is any DTC detected?

YES >> GO TO 9.
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 CCS-92, "Work Flow".
NO >> GO TO 8.

8. CHECK DATA MONITOR OF COMBINATION METER

Check that “BA W/L operates normally in “Data Monitor” mode of “METER/M&A”.

Is inspection result normal?

YES >> Replace the combination meter. Refer to MWI-81, "Removal and Installation".
NO >> Replace the ICC sensor. Refer to CCS-206, "Removal and Installation".

9. REPAIR OR REPLACE MALFUNCTIONING PARTS

Repair or replace malfunctioning parts.

>> GO TO 10.

10. CHECK FEB SYSTEM

Check that FEB warning lamp turned ON⇔OFF, when operating steering switch.

>> Inspection End.

NORMAL OPERATING CONDITION

Description

INFOID:0000000014895549

LANE CAMERA UNIT HANDLING

To maintain the proper operation of the FEB systems and prevent a system malfunction, be sure to observe the following:

- Always keep the windshield clean.
- Do not attach a sticker (including transparent material) or install an accessory near the lane camera unit.
- Do not place reflective materials, such as white paper or a mirror, on the instrument panel. The reflection of sunlight may adversely affect the lane camera unit's detection capability.
- Do not strike or damage the areas around the camera unit. Do not touch the camera lens or remove the screw located on the camera unit.

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 carelessness or dangerous driving techniques.
- The forward emergency braking system does not function in all driving, traffic, weather and road conditions.
- The lane camera unit does not detect the following objects:
  - Children and other people who are of short stature, animals, and bicycles
  - Pedestrians walking at night or in dark areas such as tunnels
  - Oncoming vehicles
  - Crossing vehicles
  - Vehicles parked diagonally
- The lane camera unit may not detect a vehicle or pedestrian ahead in the following conditions:
  - Visibility is poor because of bad weather conditions such as rain, snow, fog, dust storms, sandstorms, and snowstorms.
  - Snow, sand or road spray from traveling vehicles.
  - The windshield in front of the camera is covered with dirt, water drops, ice, snow, etc.
  - The windshield in front of the camera is fogged up.
  - Strong light (for example, sunlight or high beams from oncoming vehicles) enters from the front.
  - The headlamps did not illuminate during the nighttime or in a tunnel, or the headlamp lenses are extremely dirty.
  - Both tail lamps of the vehicle ahead do not illuminate at night or inside a tunnel.
  - When a sudden change in brightness occurs. (For example, when the vehicle enters or exits a tunnel or a shaded area.)
  - On roads where there are sharp curves.
  - The vehicle drives on a slope where the gradient changes.
  - The vehicle drives on a bumpy road surface, such as an uneven dirt road.
  - The system cannot recognize the outline of a person because the pedestrian is carrying large luggage or is wearing clothes that are the same color as the background.
- Depending on the ambient noise, the audible warning may not be heard.
- In the following conditions, the system may not be able to function normally:
  - The vehicle is driven on a slippery road.
  - The vehicle drives on a slope.
  - When excessively heavy baggage is loaded in the rear seat or the luggage room of own vehicle.