# SECTION DAS B DRIVER ASSISTANCE SYSTEM

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# < PRECAUTION > PRECAUTION

# PRECAUTIONS

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

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

#### WARNING:

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

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

#### WARNING:

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

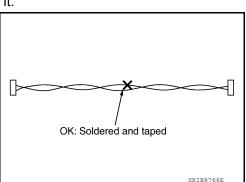
# Precautions For Harness Repair

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ITS communication uses a twisted pair line. Be careful when repairing it.

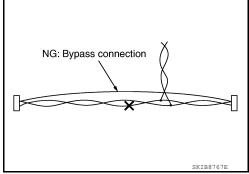
• Solder the repaired area and wrap tape around the soldered area. **NOTE:** 

A fray of twisted lines must be within 110 mm (4.33 in).



• Bypass connection is never allowed at the repaired area. **NOTE:** 

Bypass connection may cause ITS communication error. The spliced wire becomes separated and the characteristics of twisted line are lost.



# < SYSTEM DESCRIPTION > SYSTEM DESCRIPTION **COMPONENT PARTS**

# **Component Parts Location**

INFOID:000000008932604 В

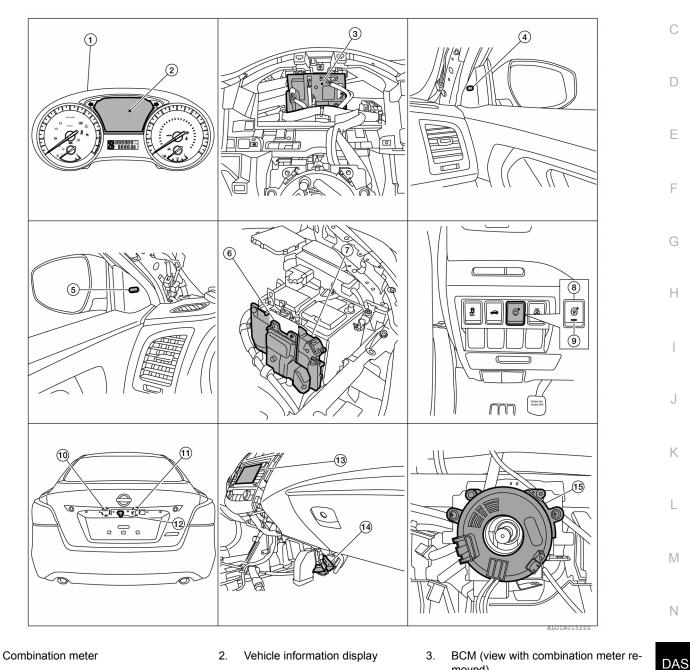
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- Blind spot warning indicator RH 4.
- 7. ECM

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- 10. Rear view camera washer control unit
- 13. AV control unit (center display)

- Vehicle information display
- 5. Blind spot warning indicator LH
- 8. Warning systems switch
- 11. Rear view camera air pump motor 14. ITS control unit
  - (view with center console removed)
- BCM (view with combination meter removed)
- TCM 6.
- 9. Warning systems ON indicator
- 12. Rear view camera
- 15. Steering angle sensor (view with steering wheel removed)

# **COMPONENT PARTS**

# < SYSTEM DESCRIPTION >

# **Component Description**

INFOID:000000008660088

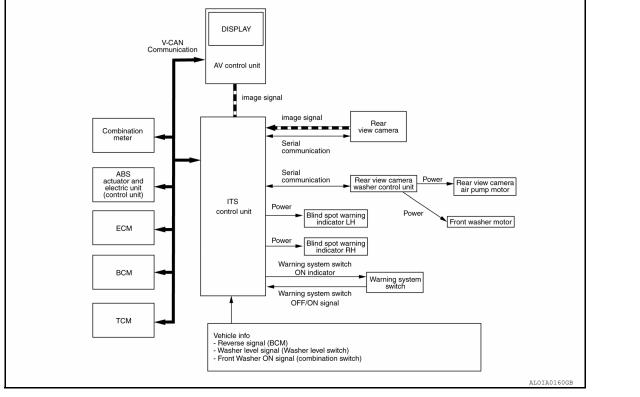
[ITS CONTROL UNIT]

Component	Description
ITS control unit	<ul> <li>Controls each system, based on signals received from the rear view camera and CAN communication signals received from each control unit</li> <li>Transmits signals necessary for control between CAN communication</li> </ul>
Blind Spot Warning indicator LH/ RH	Receives Blind Spot Warning indicator operation signal from rear view camera and turns OFF, turns ON or blinks
Warning systems switch	Inputs the switch signal to ITS control unit
Warning systems ON indicator (On the warning systems switch)	Indicates BSW/LDW system status
Rear view camera	<ul> <li>Detects the lane marker by the built-in camera</li> <li>Transmits detected lane condition signal to ITS control unit</li> </ul>
ABS actuator and electric unit (control unit)	<ul> <li>Transmits vehicle speed signal to ITS control unit via CAN communication</li> <li>Transmits yaw rate signal/side G sensor signal to ITS control unit via CAN communication</li> </ul>
Buzzer (combination meter)	Receives buzzer signal from ITS control unit and sounds buzzer.
Combination meter	<ul> <li>Turns the Lane Departure Warning/Blind Spot Warning indicator ON/OFF according to the signals from the ITS control unit via CAN communication</li> <li>Receives Lane Departure Warning/Blind Spot Warning ON indicator signal via CAN communication.</li> </ul>
Steering angle sensor	Transmits steering angle sensor signal to ITS control unit via CAN communication
BCM	<ul> <li>Transmits turn signal indicator to ITS control unit via CAN communication</li> <li>Transmits dimmer signal to ITS control unit via CAN communication</li> </ul>
ECM	Transmits engine speed signal to ITS control unit via CAN communication
ТСМ	Transmits the output shaft speed signal, input speed signal, current gear position signal and shift po- sition signal to ITS control unit via CAN communication
AV control unit	Receives the various systems and camera signals via CAN communication and routes them to the center display
Center display	Displays the various system screen signals according to the priority level received via CAN commu- nication
Rear view camera washer control unit	Controls the air pump to drive air to the rear camera lens according to the signals received from the ITS control unit
Rear view camera air pump motor	Drives air to the rear camera lens according to the signals received from the pump control unit

# SYSTEM

# System Description

# SYSTEM DIAGRAM



# ITS CONTROL UNIT INPUT/OUTPUT SIGNAL ITEM

#### Input Signal Item

Transmit unit		Signal name	Description
ECM	CAN com- munica- tion	Engine speed signal	Receives engine speed
		Input speed signal	Receives the number of revolutions of input shaft
ТСМ	CAN com- munica-	Current gear position signal	Receives a current gear position
	tion	Shift position signal	Receives a shift selector position
		Output shaft revolution signal	Receives the number of revolutions of output shaft
ABS actuator	CAN com-	Vehicle speed signal (ABS)	Receives wheel speeds of four wheels
and electric unit (control unit)	munica- tion	Yaw rate signal	Receives yaw rate acting on the vehicle
Combination meter	CAN com- munica- tion	Parking brake switch signal	Receives an operational state of the parking brake
		Front wiper request signal	Receives an operational state of front wiper(s)
ВСМ	CAN com- munica- tion	Turn indicator signal	Receives an operational state of the turn signal lamp and the hazard lamp
		Dimmer signal	Receives ON/OFF state of dimmer signal

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# SYSTEM

# [ITS CONTROL UNIT]

#### < SYSTEM DESCRIPTION >

Transmit unit	Signal name		Description
Steering angle Steering angle sensor		Steering angle sensor malfunction signal	Receives a malfunction state of steering angle sensor
		Steering angle sensor signal	Receives the number of revolutions, turning direction o the steering wheel
		Steering angle speed signal	Receives the turning angle speed of the steering wheel
AV control unit	CAN com- munica- tion	System selection signal	Receives a selection state of each item in "Driver Assis- tance" selected with the navigation system
Warning sys- tems switch	Warning systems switch signal		Receives an ON/OFF state of the warning systems switch

#### **Output Signal Item**

Reception unit		Signal na	ime	Description	
		Meter display signal	Own vehicle indicator signal	Transmits a signal to display a state of the system on the information display	
		Blind Spot Warning indicator		Transmits a Blind Spot Warning signal to turn ON the Blind Spot Warning indicator	
	CAN commu- nication	Lane Departure Warning lamp signal		Transmits a Lane Departure Warning signal to turn ON the Lane Departure Warning indicator	
	Buzzer output signal		ignal	<ul> <li>Transmits a buzzer output signal to turn ON the buzzer of the following systems:</li> <li>Moving Object Detection (MOD)</li> <li>Blind Spot Warning (BSW)</li> <li>Lane Departure Warning (LDW)</li> </ul>	
Warning buzz- er	Warning buzzer signal			Activates the warning buzzer of the following systems <ul> <li>Moving Object Detection (MOD)</li> <li>Blind Spot Warning (BSW)</li> <li>Lane Departure Warning (LDW)</li> </ul>	
Warning sys- tems ON indi- cator	Warning syste	ng systems ON indicator signal		Turns ON the warning systems ON indicator	

# DESCRIPTION

- ITS<sup>\*</sup> control unit controls the following systems, based on ITS communication signals from the rear view camera and a CAN communication signal from each control unit.
  - NOTE:
  - \*: Intelligent Technology Suite
- Moving Object Detection (MOD)
- Blind Spot Warning (BSW)
- Lane Departure Warning (LDW)

System	Reference
Moving Object Detection (MOD)	DAS-219. "System Description"
Blind Spot Warning (BSW)	DAS-146, "System Description"
Lane Departure Warning (LDW)	DAS-74, "System Description"

# Fail-safe (ITS Control Unit)

INFOID:000000008660090

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

# SYSTEM

# < SYSTEM DESCRIPTION >

# [ITS CONTROL UNIT]

System	Buzzer	Warning lamp/Indicator lamp	Description	Δ
Lane Departure Warning (LDW)	Low-pitched tone	Lane Departure Warning lamp	Cancel	A
Blind Spot Warning (BSW)	High-pitched tone	Blind Spot Warning lamp	Cancel	В
Moving Object Detection (MOD)	Low-pitched tone	Warning lamp MOD icon (on camera screen)	Cancel	
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# **DIAGNOSIS SYSTEM (ITS CONTROL UNIT)**

## < SYSTEM DESCRIPTION >

# DIAGNOSIS SYSTEM (ITS CONTROL UNIT)

# CONSULT Function (AVM)

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[ITS CONTROL UNIT]

# APPLICATION ITEMS

CONSULT performs the following functions via CAN communication using ITS control unit.

Diagnosis mode	Description
Self Diagnostic Result	Displays the name of a malfunctioning system stored in the ITS control unit
Data Monitor	Displays ITS control unit input/output data in real time
Work support	Displays causes of automatic system cancellation occurred during system control
Active Test	Enables an operational check of a load by transmitting a driving signal from the ITS control unit to the load
ECU identification	Displays ITS control unit part number
Configuration	The vehicle specification can be written when replacing the ITS control unit

#### SELF DIAGNOSTIC RESULT

Refer to DAS-20, "DTC Index".

# DATA MONITOR

Monitored item [Unit]	Description
ST ANGLE SENSOR SIGNAL [On/Off]	Indicates [On/Off] status as judged from ITS control unit (Angle sensor transmits angle signal through CAN communication)
REVERSE SIGNAL [On/Off]	Indicates [On/Off] status as judged from ITS control unit (TCM transmits reverse signal through CAN communication)
VEHICLE SPEED SIGNAL [On/Off]	Indicates vehicle speed calculated from ITS control unit through CAN communication [ABS ac- tuator and electric unit (control unit) transmits vehicle speed signal (wheel speed) through CAN communication]
CAMERA SWITCH SIGNAL [On/Off]	Indicates [On/Off] status of camera switch signal as judged from ITS control unit
CAMERA OFF SIGNAL [On/Off]	Indicates [On/Off] status of camera OFF signal as judged from ITS control unit
ST ANGLE SENSOR TYPE [Absolute/Not]	Indicates whether steering angle sensor type is absolute or not (ON means "controlling")
STEERING GEAR RATIO TYPE [Type 0/1]	Indicates the type of the steering gear ratio (type 1 or 2)
STEERING POSITION [LHD/RHD]	Indicates the steering position (LHD or RHD)
REAR CAMERA IMAGE SIGNAL [OK/Not]	Indicates the status of the rear camera image as read from ITS control unit through dedicated ITS communication lines
WASH SW [ON/OFF]	Indicates the state of the wash switch indicator output
R-CAMERA COMM STATUS [OK/Not]	Indicates the status of the rear camera communication status as read from ITS control unit through dedicated ITS communication lines
R-CAMERA COMM LINE [OK/Not]	Indicates the condition of the rear camera communication line whether transmitting properly through dedicated ITS communication lines
PUMP COMM STATUS [OK/NG]	Indicates the state of the communication signal from pump control unit
ILL [On/Off]	Indicates [On/Off] status of the illumination signal
ITS SW 1 [On/Off]	Indicates the state of the warning system switch as seen by the ITS control unit

# **DIAGNOSIS SYSTEM (ITS CONTROL UNIT)**

#### < SYSTEM DESCRIPTION >

[ITS CONTROL UNIT]

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Monitored item [Unit]	Description	А
ITS SW 1 IND [On/Off]	Indicates the state of the warning system switch indicator output	
TURN SIGNAL [Left/N/Right]	Indicates [Left/N/Right] status of the turn signal output	В
Rear Camera Image Output signal [OK/NG]	Indicates the input state of video image from rear camera	С
ITS SW_2 [ON/OFF/No setting]	Indicates the state of the warning system secondary switch as seen by the ITS control unit	
ITS SW_2 IND [ON/OFF/No setting]	Indicates the state of the warning system secondary switch indicator output	D

#### WORK SUPPORT

Work support items	Description	
PREDICTIVE COURSE LINE DISPLAY	Setting whether predictive guide line displays or not	
INITIALIZE CAMERA IMAGE CALIBRATION	Start the initialization process of the rear camera	
STEERING ANGLE SENSOR ADJUSTMENT	Execute register neutral point of steering angle sensor	
CALIBRATING CAMERA IM- AGE (REAR CAMERA)	Displays the various values of the rear camera during the calibration process	
REAR WIDE-VIEW FIXED GUIDE LINE CORRECTION	Adjustment the position of fixed guide line on rear wide view	
REAR CAMERA ITS	Displays and sets camera image calibration values	
CAUSE OF LDW CANCEL	Displays the information about reason of LDW cancellation	
CAUSE OF BSW CANCEL	Displays the information about reason of BSW cancellation	

# ACTIVE TEST

# **CAUTION:**

- Never perform "Active Test" while driving the vehicle.
- The "Active Test" cannot be performed when the following systems warning indicators are illuminated:
- Lane Departure Warning indicator
- Blind Spot Warning indicator

• Place the shift selector to P (park) position, and then perform the test.

Test item		Description		
WASH ACTIVE	ON	Activates the washer to clean the lens of rear camera		
WASHACTIVE	OFF	Activates the washer to clean the lens of real camera	Ν	
LED LH	ON	Electrice the left side LED light for ITS system		
	OFF	Flashes the left side LED light for ITS system		
	ON	Floobee the right side LED light for LTC system	DAS	
LED RH	OFF	Flashes the right side LED light for ITS system		
	ON	Activates the air nump to aloon the long of roor comore	D	
AIR ACTIVE	OFF	Activates the air pump to clean the lens of rear camera	P	
AIR & WASH ACTIVE	ON	Activates the sir numbered weather to allow the lang of room compare		
AIR & WASH AUTIVE	OFF	Activates the air pump and washer to clean the lens of rear camera		

#### **BSW ON INDICATOR**

# **DIAGNOSIS SYSTEM (ITS CONTROL UNIT)**

# < SYSTEM DESCRIPTION >

[ITS CONTROL UNIT]

Test item	Oper- ation	Description	Blind Spot Warning ON indicator lamp (Yellow)
BSW ON INDICATOR	Off	Stops transmitting the Blind Spot Warning ON indicator signal below to end the test	Off
DOW ON INDICATOR	On	Transmits the Blind Spot Warning ON indicator signal to the warning lamp on the door	ON
Washer	Off	Stops transmitting activate signal to washer below to end the test	Off
	On	Transmits activate signal to washer	ON
Air pump	Off	Stops transmitting activate signal to air pump below to end the test	Off
	On	Transmits activate signal to air pump	ON

## ECU IDENTIFICATION

ITS control unit part number is displayed.

## CONFIGURATION

The specifications of the vehicle can be written and read in the ITS control unit when replaced.

# < ECU DIAGNOSIS INFORMATION > ECU DIAGNOSIS INFORMATION

# **ITS CONTROL UNIT**

# **Reference Value**

# VALUES ON THE DIAGNOSIS TOOL

Monitor item		Condition	Value/Status	
STEERING ANGLE	Ignition switch ON	Steering angle signal is received	On	-
STEERING ANGEL	Ignition Switch ON	Steering angle signal is not received	Off	D
REVERSE SIGNAL	Ignition switch ON	Shift selector in R (reverse)	On	_
REVERSE SIGNAL		Shift selector is not in R (reverse)	Off	- E
VEHICLE SPEED	While driving	Vehicle speed signal is received	On	
VEHICLE SPEED		Vehicle speed signal is not received	Off	_
CAMERA SWITCH	Ignition switch ON	Camera switch is pressed	On	F
CAMERA SWITCH		Camera switch is not pressed	Off	_
CAMERA OFF	Ignition switch ON	Purpose switch is pressed	On	_
SWITCH		Purpose switch is not pressed	Off	G
TYPE OF STEER AN-	Ignition switch ON	Steering angle sensor type is displayed	Absolute	_
GLE SENSOR		Steering angle sensor type is not received	Not	H
TYPE OF STEER	Ignition switch ON	Pattern 1 type of steering gear ratio displayed	Pattern 1	-
GEAR RATIO		Pattern 2 type of steering gear ratio displayed	Pattern 2	_
LEFT OR RIGHT	Ignition switch ON	It recognizes steering position is left	LHD	
STEER		It recognizes steering position is right	RHD	-
REAR CAMERA	Ignition switch ON	Rear camera serial status is OK	OK	J
COMM STATUS		Rear camera serial status is not OK	NG	
REAR CAMERA	Ignition owitch ON	Rear camera serial communication signal is received	OK	-
COMM LINE	Ignition switch ON	Rear camera serial communication signal is not received	NG	K
ILL	Ignition switch ON	Illumination is ON	On	_
		Illumination is OFF	Off	-
	Ignition switch ON	ITS switch is pressed	On	- L
ITS SW_1	Ignition switch ON	ITS switch is not pressed	Off	-
ITS SW 1 IND	Ignition switch ON	Indicator of ITS switch 1 is lighting	On	M
		Indicator of ITS switch 1 is not lighting	Off	_
		Turn signal left is received	Left	
TURN SIGNAL	Ignition switch ON	Turn signal neutral is received	Ν	- N
		Turn signal right is received	Right	-
R-CAMERA IMAGE	Ignition switch ON	Camera image signal is received	On	DAS
R-CAMERA IMAGE		Camera image signal is not received	Off	
ITS SW_2	Ignition switch ON	For this vehicle, the displaying is fixed	No setting	-
ITS SW 2 IND	Ignition switch ON	For this vehicle, the displaying is fixed	No setting	P
WASH SWITCH SIG-	Ignition switch ON	Wash switch signal is pressed	On	_
NAL	Ignition Switch ON	Wash switch signal is not pressed	Off	_
PUMP COMM STA-	Ignition switch ON	Pump communication signal is received	On	_
TUS	Ignition switch ON	Pump communication signal is not received	Off	-

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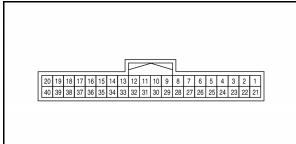
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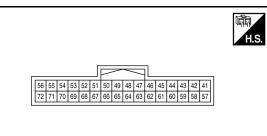
# < ECU DIAGNOSIS INFORMATION >

# [ITS CONTROL UNIT]

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# **TERMINAL LAYOUT**





PHYSICAL VALUES

	nal No. color)	Description			Condition	Value
+	-	Signal name	Input/ Output		Condition	(Approx.)
1	Ground	Washer level switch	Input	Ignition	When washer fluid is low (switch closed)	0 V
(BR)	Ground		input	switch ON	When washer fluid is not low (switch open)	12 V
2 (Y)	Ground	Washer signal pump to camera	Input	Ignition sw	itch ON	5 V
3 (LG)	Ground	Washer signal camera to pump	Output	Ignition sw	itch ON	5 V
7 (P)	Ground	CAN -L		_	_	_
17	Ground	SOW LED signal R	Output	While	LDW/BSW detected	12 V
(G)	Ground	SOW LED Signal IX	Output	driving	LDW/BSW is not detected	0 V
20 (G)	Ground	Battery supply	Input	_	_	12 V
22 (BR)	Ground	Serial ground	Output	_	_	0 V
27 (L)	Ground	CAN -H		_	_	_
28	Ground	Reverse	Input	Ignition	Shift selector in R (re- verse)	12 V
(R)	Ground	The verse	input	switch ON	Shift selector not in R (re- verse)	0 V
32	Ground	Cancel SW output	Input	Ignition	Cancel switch pressed	0 V
(P)	Gibunu		mput	switch ON	Cancel switch not pressed	12 V
33	Ground	LED input	Output	Ignition	Warning system is ON	12 V
(BG)	Gibunu		Output	switch ON	Warning system is OFF	0 V
37	Ground	SOW LED signal L	Output	While	LDW/BSW detected	12 V
(W)	Gibunu	SOW LED Signal E	Output	driving	LDW/BSW is not detected	0 V
39 (BG)	Ground	Ignition power supply	Input	Ignition sw	itch ON	Battery Voltage
40 (B)	Ground	Ground	—	_	_	0 V
50, 53	Ground	Shield	_	_	_	0 V
51 (R)	Ground	RR CAM GND	Output	Ignition switch ON	_	0 V

# **ITS CONTROL UNIT**

#### < ECU DIAGNOSIS INFORMATION >

INFOID:000000008660094

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	nal No. color)	Description		Condition	Value				
+	_	Signal name	Input/ Output	Condition	(Approx.)				
52 (W)	Ground	RR CAM ON	Output	Ignition switch ON	6 V	В			
66 (B)	Ground	RR CAM COMP +	Input	Ignition switch ON	(V) 1 0 -1 → 40 µ s ALDIK017922	C			
68 (G)	Ground	RR CAM CONT	Input	Ignition switch ON	5 V	Ε			
69 (B)	Ground	RR CAM COMP +	Input	Ignition switch ON	(V) 1 0 -1 → 40 µ s ALULR017922	F			
	6		I		<u> </u>	Н			

# Fail-safe

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

System	Buzzer	Warning Indicator lamp	Description	
Lane Departure Warning (LDW)	Low-pitched tone	Lane Departure Warning lamp	Cancel	U
Blind Spot Warning (BSW)	High-pitched tone	Blind Spot Warning lamp	Cancel	k
Moving Object Detection (MOD)	Low-pitched tone	Warning lamp MOD icon (on camera screen)	Cancel	

# **DTC Inspection Priority Chart**

If multiple DTCs are detected simultaneously, check them one by one depending on the following DTC inspection priority chart.

Priority	Detected items (DTC)	
1	U1000: CAN COMM CIRCUIT     U1010: CONTROL UNIT (CAN)	
2	U1305: CAMERA IMAGE CALIB     U1308: CAMERA CONFIG	
3	<ul> <li>C1A39: STRG SEN CIR</li> <li>U0428: STRG SEN CAN CIR 2</li> <li>U111A: REAR CAMERA IMAGE SIGNAL</li> <li>U1232: ST ANGLE SEN CALIB</li> <li>U1309: PUMP UNIT CURRENT</li> <li>U130B: REAR CAMERA COMM ERROR</li> <li>U1310: PUMP UNIT CIRCUIT</li> </ul>	
4	<ul> <li>C1A03: VHCL SPEED SE CIRC</li> <li>C1A04: VDC FAIL</li> <li>U0122: VDC P-RUN DIAG</li> <li>U0416: VDC CHECKSUM DIAG</li> </ul>	

# **ITS CONTROL UNIT**

#### < ECU DIAGNOSIS INFORMATION >

# DTC Index

[ITS CONTROL UNIT]

INFOID:000000008660096

#### NOTE:

- The details of time display are as follows:
- 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  $0 \rightarrow 1 \rightarrow 2 \cdots 38 \rightarrow 49$  after returning to the normal condition whenever the ignition switch OFF  $\rightarrow$  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.
  - Systems for fail-safe
  - A: Lane Departure Warning (LDW)
  - B: Blind Spot Warning (BSW)
  - C: Moving Object Detection (MOD)

DTC		N N	Narning lam	ıp	Fail-safe	
CONSULT	CONSULT display	Lane Departure Warning	Blind Spot Warning	Moving Object Detection	System	Reference
C1A03	VHCL SPEED SE CIRC	ON	ON	ON	A, B, C	DAS-40
C1A04	VDC FAIL	ON	ON	ON	A, B, C	DAS-41
C1A39	STRG SEN CIR	ON	ON	ON	A, B, C	DAS-42
NO DTC IS DETECTED. FURTHER TESTING MAY BE RE- QUIRED	NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED	_	_	_	_	_
U0122	VDC P-RUN DIAG	ON	ON	ON	A, B, C	DAS-43
U0416	VDC CHECKSUM DIAG	ON	ON	ON	A, B, C	DAS-44
U0428	STRG SEN CAN CIR 2	ON	ON	ON	A, B, C	DAS-45
U1000 <sup>NOTE</sup>	CAN COMM CIRCUIT	ON	ON	ON	A, B, C	DAS-46
U1010	CONTROL UNIT (CAN)	ON	ON	ON	A, B, C	DAS-47
U111A	REAR CAMERA IMAGE SIGNAL	ON	ON	ON	A, B, C	<u>DAS-48</u>
U1232	ST ANGLE SEN CALIB	ON	ON	ON	A, B, C	DAS-50
U1305	CAMERA IMAGE CALIB	ON	ON	ON	A, B, C	DAS-51
U1308	CAMERA CONFIG	ON	ON	ON	A, B, C	DAS-52
U1309	PUMP UNIT CURRENT	ON	ON	ON	A, B, C	<u>DAS-53</u>
U130B	REAR CAMERA COMM ERROR	ON	ON	ON	A, B, C	DAS-56
U1310	PUMP UNIT CIRCUIT	ON	ON	ON	A, B, C	DAS-57

#### NOTE:

With the detection of "U1000" some systems do not perform the fail-safe operation.

# **ITS CONTROL UNIT**

#### < ECU DIAGNOSIS INFORMATION >

A system controlling based on a signal received from the control unit performs fail-safe operation when the communication with the ITS control unit becomes inoperable.

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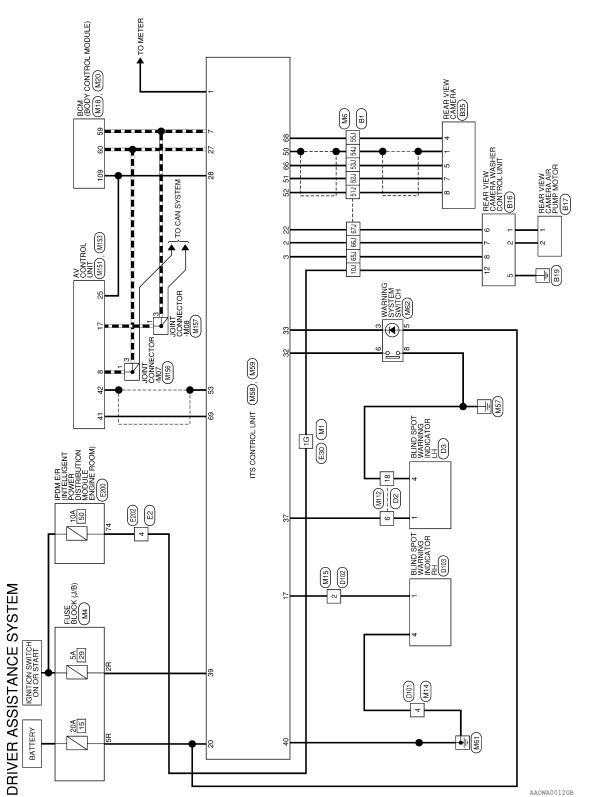
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[ITS CONTROL UNIT]

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# WIRING DIAGRAM DRIVER ASSISTANCE SYSTEMS

Wiring Diagram



# DRIVER ASSISTANCE SYSTEMS

#### < WIRING DIAGRAM >

# [ITS CONTROL UNIT]

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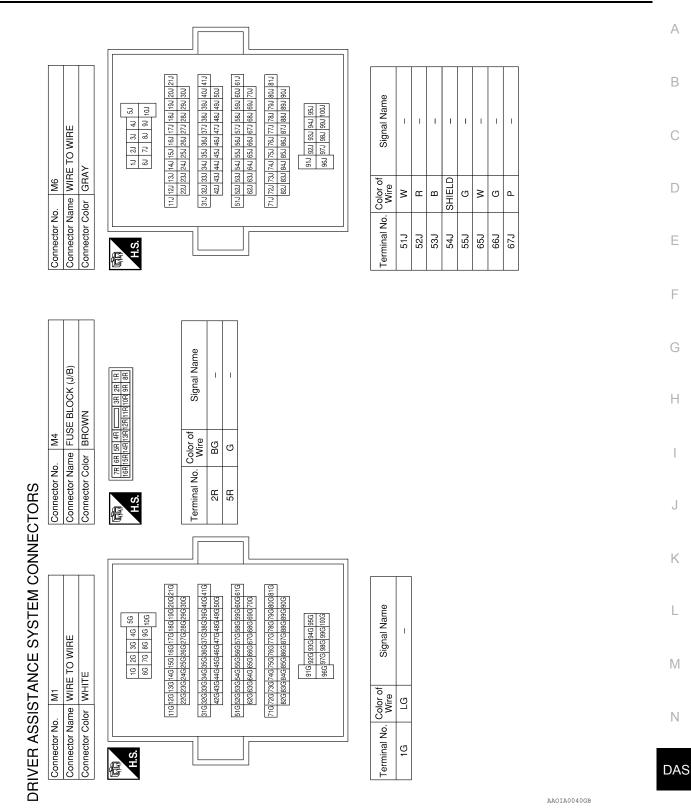
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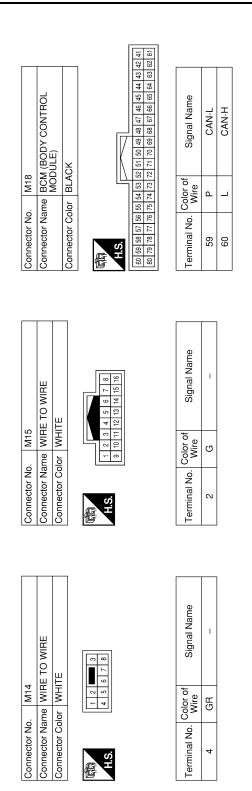
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Signal Name	<b>REVERSE SIGNAL</b>	
Color of Wire	G	
Terminal No.	109	

AAOIA0041GB

Connector Name ITS CONTROL UNIT

M58

Connector No.

Connector Color WHITE

# **DRIVER ASSISTANCE SYSTEMS**

Signal Name

Color of Wire

Terminal No.

Signal Name I.

Color of Wire

Terminal No. 46

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### < WIRING DIAGRAM >

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RR CAM COMP +

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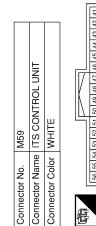
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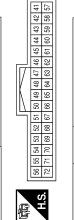
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Signal Name	I	I	I	CAN-H	REV	I	I	I	CANCEL SW OUTPUT	LED INPUT	1	I	I	SOW LED SIGNAL L	I	IGN	GND	
Color of Wire	I	-	I	_	Я	I	I	-	٩	BG	I	I	-	Μ	I	ЫG	в	
Terminal No. Color of Wire	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
															_			
Signal Name	CAN-L	1	I	I	1	1	I	1	1	1	SOW LED SIGNAL R	I	1	B+	1	SERIAL GND	1	
Color of Wire	٩	I	I	I	I	I	I	Ι	ı	ı	σ	I	I	G	ı	Ч	ı	
Terminal No. Color of Wire	7	8	6	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
		]				33	24 23 27 21				0							

	22 2.							
	5 4 3 25 24 23	le	SW	,U /U	RA AP			
	8 7 6 28 27 26	Signal Name	WASH LVL SW	FROM PUMP TO CAMERA C/U	FROM CAMERA C/U TO PUMP	I	I	I
	2 11 10 9 2 31 30 29	õ	MA	FRO	FRO C/L			
	16         15         14         13         12         11         10         9           36         35         34         33         32         31         30         29	Color of Wire	ВВ	U	N	Ι	Ι	I
H.S.	20 19 18 17 16 40 39 38 37 36	Terminal No.	-	2	e	4	5	9





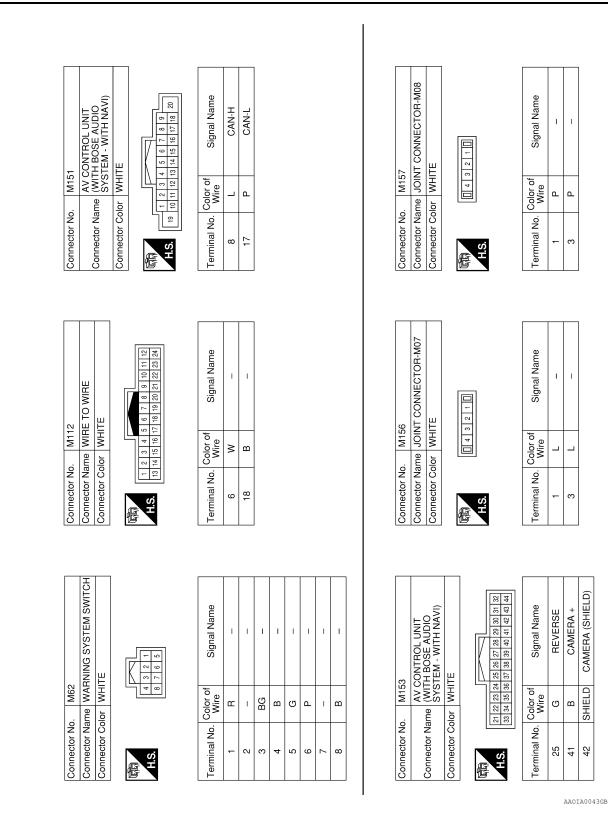
Signal Name	Т	Н	-	Н	-
Color of Wire	I	I	I	I	Ι
Terminal No. Color of Wire	41	42	43	44	45

AAOIA0042GB

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# DRIVER ASSISTANCE SYSTEMS

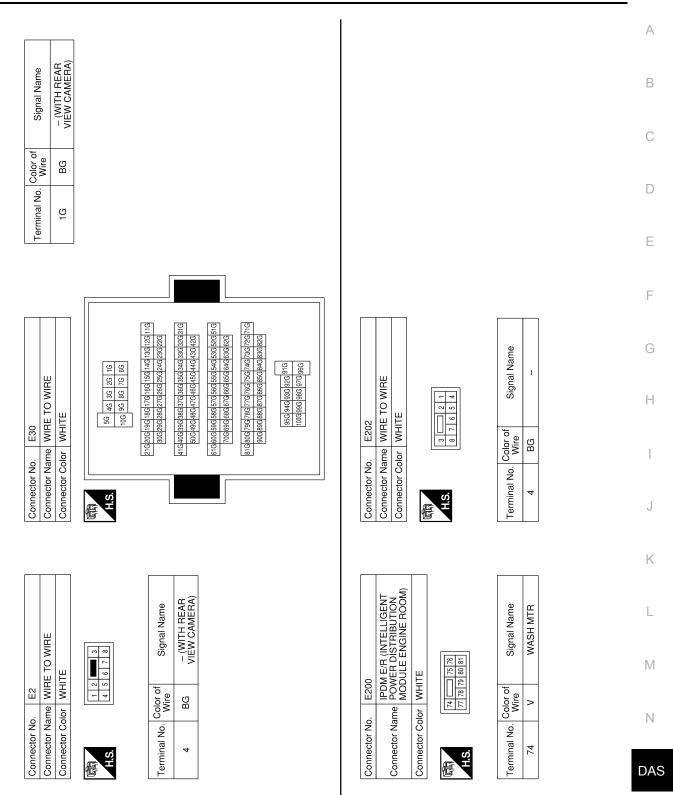
< WIRING DIAGRAM >

# [ITS CONTROL UNIT]

Revision: August 2012



< WIRING DIAGRAM >



AAOIA0044GB

Connector No. D103 Connector Name BLIND SPOT WARNING INDICATOR RH Connector Color WHITE

E

 
 H.S.
 [4 | 3 | 2 | 1]

 Terminal No.
 Color of Wire
 Signal Name

 1
 R

 2

1 1 1

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AAOIA0050GB

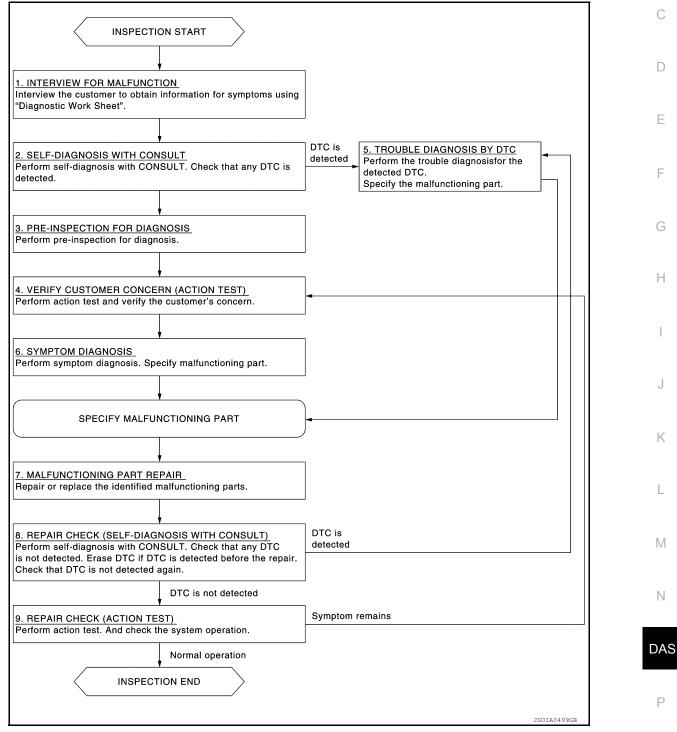
**OVERALL SEQUENCE** 

# BASIC INSPECTION DIAGNOSIS AND REPAIR WORK FLOW

# Work Flow

INFOID:00000008840782

А



# DETAILED FLOW

**1.**INTERVIEW FOR MALFUNCTION

Interview the customer to obtain information about symptoms using "Diagnostic Work Sheet". (Refer to <u>DAS-</u> <u>30, "Diagnostic Work Sheet"</u>.)

# DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

>> 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 "AVM".

Is any DTC detected?

YES >> GO TO 5.

NO >> GO TO 3.

**3.** PRE-INSPECTION FOR DIAGNOSIS

Perform pre-inspection for diagnosis. Refer to DAS-32, "Inspection Procedure".

>> GO TO 4.

# **4.**ACTION TEST

Perform LDW system action test to check the operation status. Refer to DAS-33, "Description".

>> GO TO 6.

**5.**TROUBLE DIAGNOSIS BY DTC

Perform trouble diagnosis for the detected DTC. Specify a malfunctioning part. Refer to <u>DAS-20, "DTC Index"</u> (ITS CONTROL UNIT).

>> GO TO 7.

**6.**SYMPTOM DIAGNOSIS

Perform symptom diagnosis. Specify malfunctioning part. Refer to DAS-132, "Symptom Table".

>> GO TO 7.

7.MALFUNCTION PART REPAIR

Repair or replace the identified malfunctioning parts.

>> GO TO 8.

**8**.REPAIR CHECK (SELF-DIAGNOSIS WITH CONSULT)

Perform self-diagnosis with CONSULT. Check that any DTC is not detected. Erase DTC if DTC is detected before the repair. Check that DTC is not detected again.

Is any DTC detected?

YES >> GO TO 5. NO >> GO TO 9.

**9.**REPAIR CHECK (ACTION TEST)

Perform LDW system action test. Also check the system operation.

Does it operate normally?

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

Diagnostic Work Sheet

## DESCRIPTION

In general, each customer feels differently about an incident. It is important to fully understand the symptoms or conditions for a customer complaint.

There are many operating conditions that lead to the malfunction. A good grasp of such conditions can make troubleshooting faster and more accurate.

Some conditions may cause the lane departure warning lamp to stay ON.

Revision: August 2012

# **DAS-30**

2013 Altima Sedan

INFOID:000000008840783

# DIAGNOSIS AND REPAIR WORK FLOW

#### < BASIC INSPECTION >

Utilize a work sheet sample to organize all of the information for troubleshooting.

KEY POINTS

- WHAT..... System and functions
- WHEN..... Date, Frequencies
- WHERE..... Road conditions
- HOW..... Operating conditions, Symptoms

#### WORK SHEET SAMPLE

Customer name MR/MS		Model and Year		VIN		
Engine #		Trans.		Mileage		
Incident Date		Manuf. Date		In Service Date		
Symptoms						
	Lane departure warning lamp	Stays ON Turned ON occasional	☐ Stays y ☐ Other		Blinks	)
Indicator/Warning lamps	☐ Warning systems ON indicator	☐ Stays ON	☐ Stays ☐ Other		Blinks	)
	Other lamps ()	Stays ON Turned ON occasional	☐ Stays y ☐ Other		Blinks	)
	UWhen using LDW					
	□ All functions do not operate. □ Warning function does not operate. (□ No sound □ No indicator) □ Yawing function does not operate. (Warning function is operated.)					
Functions	<ul> <li>Functions when changing the course in the turn signal direction.</li> <li>Functions are untimely.</li> <li>Does not function when driving on lane markers.</li> <li>Functions when driving in a lane.</li> <li>Functions in a different position from the actual position.</li> <li>Others (</li> </ul>					
	Functions     Functions	when driving in a lane.				
Conditions	Functions     Functions	when driving in a lane.				
	Functions     Functions	when driving in a lane.	the actual p )			
Conditions Frequency Light conditions	Functions     Functions     Others (	s when driving in a lane. s in a different position from	ently		g light)	
Frequency	Functions     Functions     Functions     Others (     Continuously     Not affected     In the daytime	s when driving in a lane. s in a different position from Intermitte	the actual p	sunset (Strong	g light)	)
Frequency Light conditions	Functions     Functions     Functions     Others (      Continuously      Not affected     In the daytime     Direct light     Not affected	when driving in a lane. in a different position from Intermitte At night Backlight	the actual p	sunset (Strong	g light)	)
Frequency Light conditions Driving conditions	Functions     Functions     Functions     Functions     Others (     Continuously     Not affected     In the daytime     Direct light     Not affected     Vehicle speed     Not affected     Fine	when driving in a lane. in a different position from Intermitte At night Backlight MPH ( km/h)	the actual p ) ently Sunrise/s Others ( Vehicle is Snowing	sunset (Strong	g light)	)
Frequency Light conditions Driving conditions Weather conditions	Functions     Functions	when driving in a lane. in a different position from Intermitte At night Backlight MPH ( km/h) Raining In town	the actual p ) ently Gunrise/s Others ( Vehicle is Snowing Others (	sunset (Strong	g light)	)

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< BASIC INSPECTION >

# [ITS CONTROL UNIT]

# PRE-INSPECTION FOR DIAGNOSIS

**Inspection Procedure** 

INFOID:000000008840784

**1.**CHECK CAMERA LENS

Is camera lens contaminated with foreign materials?

YES >> Clean camera lens.

NO >> GO TO 2.

2. CHECK REAR VIEW CAMERA UNIT INSTALLATION CONDITION

Check rear view camera unit installation condition (installation position, properly fitted).

Is it properly installed?

YES >> GO TO 3.

NO >> Install rear view camera unit properly, and perform rear view camera calibration. Refer to <u>DAS-36.</u> <u>"Description"</u>.

3. CHECK VEHICLE HEIGHT

Check vehicle height. Refer to FSU-26, "Wheelarch Height (Unladen\*1)".

Is vehicle height appropriate?

YES >> Inspection End.

NO >> Repair vehicle to appropriate height.

# **ACTION TEST**

# [ITS CONTROL UNIT]

ACTION	ITEST					٨
Description	on				INFOID:000000008840785	A
<ul> <li>Perform a</li> </ul>	action test to verify the cus action test and check the s			liagnosis.		В
CAUTION:		-		hen performing road test.		С
<ul> <li>Precaution</li> <li>System design of the system design</li></ul>	ons: Refer to <u>DAS-70, "P</u> lescription for LDW: Refe lescription for BSW: Ref lescription for MOD: Ref	recaution for Ll er to <u>DAS-74, "S</u> er to <u>DAS-146, '</u>	DW System S System Descr "System Desc	<u>ervice"</u> . i <u>ption"</u> . cription".		D
- Handling	precaution: Refer to DA	S-79, "Precauti	ons for Lane	Departure Warning".		Е
•	n Procedure				INFOID:000000008840786	
		safety around	the vehicle w	hen performing road test.		F
- Precautio	lerstand the following ite ons: Refer to <u>DAS-70, "P</u> lescription for LDW: Refe	recaution for Ll er to DAS-74. "S	<u>DW System S</u> Svstem Descr	ervice". iption".		G
<ul> <li>System d</li> <li>System d</li> <li>Handling</li> </ul>	lescription for BSW: Ref lescription for MOD: Ref precaution: Refer to <u>DA</u>	er to <u>DAS-146, '</u> er to DAS-219, '	<u>"System Desc</u> "System Desc	cription". cription".		Н
	LDW SYSTEM SETTING					I
2. Check	e engine. that the LDW system setti FF the ignition switch and			the vehicle information disp	lay.	
	that the previous setting is			again.		J
•	GO TO 2. TEST FOR LDW					K
2. Turn wa	the setting of the LDW sy arning systems switch ON the LDW operation accord	(warning systen	ns ON indicato			L
		<u> </u>	Warning sys-			
Vehicle o	condition/ Driver's operation	Action	tems ON indi- cator	Indication on the combination meter	Buzzer	Μ
Less than Approx. 60 km/h (40 MPH)	Close to lane marker	No action	ON		_	N DAS
				White		Р

< BASIC INSPECTION >

# **ACTION TEST**

### < BASIC INSPECTION >

Vehicle o	condition/ Driver's operation	Action	Warning sys- tems ON indi- cator	Indication on the combination meter	Buzzer
Approx. 70 km/h (45	Close to lane marker	Warning <ul> <li>Buzzer sounds</li> <li>Warning lamp blinks</li> </ul>	ON	(Orange) White Blink ALOIA0190GB	Short contin- uous beeps
MPH) or more	<ul> <li>Close to lane marker</li> <li>Turn signal ON (Deviate side)</li> </ul>	No action	ON	White ALOIA0191GB	_

# NOTE:

After the operating conditions of warning are satisfied, the warning continues until the vehicle speed reaches approximately 60 km/h (40 MPH). Refer to <u>DAS-74, "System Description"</u>.

>> Inspection End.

ADDITIONAL SERVICE WHEN REPLACING REAR VIEW CAMERA < BASIC INSPECTION > [ITS CONTROL UNIT]	I
ADDITIONAL SERVICE WHEN REPLACING REAR VIEW CAMERA	-
Description	37
Always perform the calibration after removing and installing or replacing the rear view camera. CAUTION: The system does not operate normally unless the rear view camera aiming adjustment is performed	í.
Always perform it.	
Work Procedure	8
1.CAMERA AIMING ADJUSTMENT	
Perform the camera aiming adjustment with CONSULT. Refer to <u>DAS-36, "Description"</u> .	-
>> GO TO 2. 2.PERFORM SELF-DIAGNOSIS	
Perform the self-diagnosis of rear view camera with CONSULT. Check if any DTC is detected.	-
<u>Is any DTC detected?</u> YES >> Perform the trouble diagnosis for the detected DTC. Refer to <u>DAS-20, "DTC Index"</u> . NO >> GO TO 3.	
3.LDW/BSW SYSTEM ACTION TEST	
<ol> <li>Perform the LDW/BSW system action test. Refer to <u>DAS-33</u>, "<u>Description</u>".</li> <li>Check that the LDW/BSW system operates normally.</li> <li><u>Is the inspection result normal?</u></li> <li>YES &gt;&gt; Inspection End.</li> <li>NO &gt;&gt; GO TO 4.</li> </ol>	-
4.LDW/BSW ACTIVE TEST	
<ol> <li>Perform WASH ACTIVE on Active Test using CONSULT.</li> <li>Perform air and washer tube connection check by AIR &amp; WASH ACTIVE on Active Test:</li> </ol>	-
(1) Washer fluid output count on the rear view camera is 3 to 5 times $\rightarrow$ OK (2) Washer fluid output count on the rear view camera is 10 times $\rightarrow$ Check tube with yellow marking (3) Washer fluid output count on the rear view camera is 1 time $\rightarrow$ Check tube with green marking	
(4) No washer fluid output $\rightarrow$ Check tube with blue marking or check valve	
>> Inspection End.	
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# **REAR VIEW CAMERA CALIBRATION**

< BASIC INSPECTION >

# REAR VIEW CAMERA CALIBRATION

# Description

Always perform the calibration after removing and installing or replacing the rear view camera. **CAUTION:** 

- Place the vehicle on level ground when the calibration is performed.
- Follow the CONSULT when performing the calibration. (Rear view camera calibration cannot be operated without CONSULT).

# Work Procedure (Preparation)

INFOID:000000008840790

INFOID:00000008840789

[ITS CONTROL UNIT]

# **1.**PERFORM SELF-DIAGNOSIS

Perform self-diagnosis of the ITS control unit.

#### Is any DTC detected?

Except "U1308">> Perform diagnosis on the detected DTC and repair or replace the applicable item. Refer to DAS-20. "DTC Index".

"U1308" or no DTC>>GO TO 2.

# 2.PREPARATION BEFORE REAR VIEW CAMERA CALIBRATION

## NOTE:

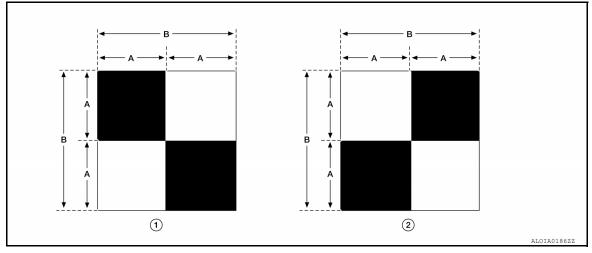
Select the "AVM" to diagnose the ITS control unit by CONSULT.

- 1. Perform pre-inspection for diagnosis. Refer to DAS-32, "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. Situate vehicle where the camera is exposed at an atmosphere temperature between 0°C (32°F) and 30°C (86°F)
- 6. Move the shift selector to P (Park) and release the parking brake.
- 7. Clean the rear view camera.

>> GO TO 3.

# $\mathbf{3}$ . PREPARATION OF CALIBRATION TARGET MARK

Prepare the calibration target mark according to the following figure:



#### (1) : Left and right targets

- (2) : Center target
- (A) : Side of the black or white area = 200 mm (7.87 in)
- (B) : Side of the square target
- = 400 mm (15.75 in)

< BASIC INSPECTION >

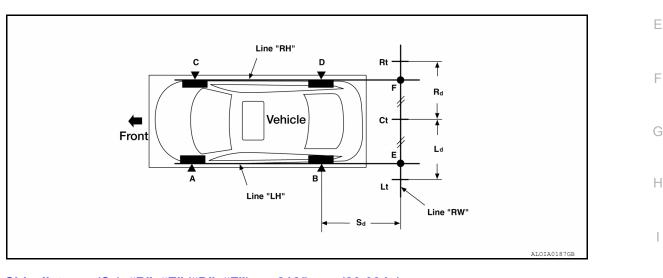
#### >> Refer to DAS-37, "Work Procedure (Target Setting)".

#### Work Procedure (Target Setting)

#### **CAUTION:**

- Perform this operation in a horizontal position where there is a clear view for 3 m (9.84 ft) backward and 4 m (13.12 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 it shines by the reflected light of the sun or lighting.
- The target may not be detected when there is the same pattern of black and white as the target when the pattern is within 0.5 m (1.64 ft) from either side and upward/downward position from the target. (It is desirable that the vehicle is positioned on a single-color floor.)

#### **1.**TARGET SETTING



Side distance (Sd): "B"–"E" ("D"–"F") : 2125 mm (83.66 in) Left distance (Ld): "Ct"–"Lt" : 1500 mm (59.06 in) Right distance (Rd): "Ct"–"Rt" : 1500 mm (59.06 in)

1. Mark points "A", "B", "C" and "D" at the center of the lateral surface of each wheel.

#### 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 2.2 m (7.22 ft) or more at the rear from the rear axle.

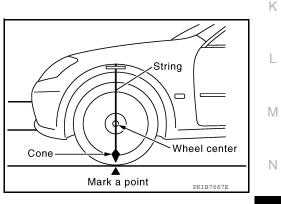
- 3. Mark point "E" on the line "LH" at the positions 2125 mm (83.66 in) from point "B".
- 4. Draw line "RH" passing through points "C" and "D" on the right side of vehicle in the same way as step 2.
- 5. Mark point "F" on the line "RH" at the positions 2125 mm (83.66 in) from point "D".
- 6. Draw line "RW" passing through the points "E" and "F" on the rear of the vehicle. **NOTE:**

Approximately 1.8 m (5.91 ft) or more at both left and right sides from vehicle center.

7. Mark point "Ct" at the center of point "E" and "F" on the line "RW". CAUTION:

#### Make sure that "E" to "Ct" is equal to "F" to "Ct".

- 8. Mark point "Lt" and "Rt" on the line "RW" at the positions 1500 mm (59.06 in) from point "Ct".
- 9. Position the center of the target mark to point of "Ct".



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[ITS CONTROL UNIT]

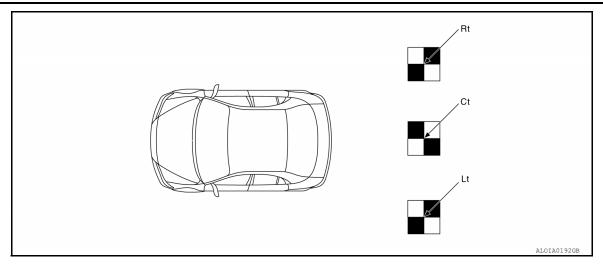
INFOID-000000008840791

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# **REAR VIEW CAMERA CALIBRATION**

< BASIC INSPECTION >



#### CAUTION:

Make sure that the black/white pattern of the center target is rotated as compared with the left and right targets.

>> Go to DAS-38, "Work Procedure (Rear View Camera Calibration)".

Work Procedure (Rear View Camera Calibration)

INFOID:000000008840792

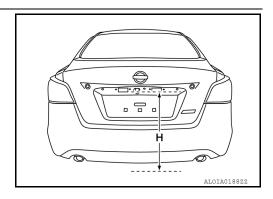
#### CAUTION:

Perform the calibration under the specified vehicle condition (fuel full, no-load, specified tire pressure, etc.). Refer to <u>DAS-36, "Work Procedure (Preparation)"</u>.

**1.**CHECK REAR VIEW CAMERA HEIGHT

Measure the rear view camera height "H".

>> GO TO 2.



# 2. REAR VIEW CAMERA CALIBRATION

- 1. Select "Work Support" on "AVM" with CONSULT.
- 2. Select "REAR CAMERA ITS".
- 3. Select "OK".
- 4. Input the rear view camera height "H", and then touch "APPLY".
- 5. Confirm that the same value is displayed on the center display.
- 6. Confirm the following items:
- The target should be accurately placed.
- The vehicle should be stopped.
- The vehicle should be under the specified vehicle condition.
- 7. Select "Start" to perform calibration.

#### CAUTION:

- Perform the calibration after the ignition or engine has been kept on for at least 10 minutes to stabilize camera.
- Operate CONSULT outside the vehicle, and close all doors to retain appropriate vehicle altitude.
- 8. Confirm the displayed item.
- "Completed": Select "Completion".
- Otherwise, perform the following services:

# **REAR VIEW CAMERA CALIBRATION**

#### < BASIC INSPECTION >

#### [ITS CONTROL UNIT]

Displayed item		Possible cause	Service procedure
	_	Temporary malfunction in internal processing of the rear view camera.	Go back to Step 1
SUSPENSION	00H Routine not ac- tivated	Rear view camera unit malfunction.	Position the target appro- priately again. Perform
	10H Writing error	<ul><li>Temporary malfunction in internal processing of the rear view camera.</li><li>Rear view camera malfunction.</li></ul>	the aiming again. Refer to <u>DAS-37, "Work Proce-</u> <u>dure (Target Setting)"</u> .
X AIMING NG Y (X: 0 - 7, Y: 1 - 8)	_	A target is not-yet-placed. (The rear view camera cannot detect a target.)	Position the target appro- priately again. Perform
ABNORMALLY COM- PLETED	_	<ul><li>The position of the rear view camera is not correct.</li><li>Inappropriate work environment.</li><li>Inappropriate vehicle condition.</li></ul>	the aiming again. Refer to <u>DAS-36, "Work Proce-</u> <u>dure (Preparation)"</u> .

#### NOTE:

Replace camera unit if "00H Routine not activated" or "10H Writing error" are repeatedly indicated during the above two services are performed.

9. Confirm that "Completed" is displayed and then select "End" to close the calibration procedure.

>> GO TO 3.

# **3.**PERFORM SELF-DIAGNOSIS

Perform self-diagnosis of ITS control unit with CONSULT.

Is any DTC detected?

- YES >> Perform diagnosis on the detected DTC and repair or replace the applicable item. Refer to DAS-20, "DTC Index". NO >> GO TO 4.
- **4**.ACTION TEST

Test the system operation by action test. Refer to DAS-33. "Description".

>> Work End.

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# DTC/CIRCUIT DIAGNOSIS C1A03 VEHICLE SPEED SENSOR

DTC Logic

INFOID:000000008840729

# DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
C1A03	VHCL SPEED SEN CIRC	ITS control unit detects that the result of calculation about velocity has error.	<ul> <li>ABS actuator and electric unit (control unit)</li> <li>ITS control unit</li> </ul>

# DTC CONFIRMATION PROCEDURE

**1.**PERFORM DTC CONFIRMATION PROCEDURE

1. Turn ignition ON.

- 2. Perform "All DTC Reading" with CONSULT.
- 3. Check if the "C1A03" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".

Is "C1A03" detected as the current malfunction?

- YES >> Refer to DAS-40. "Diagnosis Procedure".
- NO >> Refer to <u>GI-47, "Intermittent Incident"</u>.

# Diagnosis Procedure

INFOID:000000008840730

# 1. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) SELF-DIAGNOSIS RESULTS

Check if any DTC is detected in "Self Diagnostic Result" of "ABS".

Is any DTC detected?

YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. Refer to BRC-44. "DTC Index".

NO >> GO TO 2.

2.CHECK ALL UNIT SELF-DIANOSIS RESULTS

Check if any DTC is detected except for ITS control unit about VDC in "ALL DTC READING" with CONSULT. Is any DTC detected except for ITS?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-123, "Removal and Installa-</u> tion".
- NO >> Replace ITS control unit. Refer to DAS-66, "Removal and Installation ITS Control Unit".

# C1A04 ABS/TCS/VDC SYSTEM

#### < DTC/CIRCUIT DIAGNOSIS >

C1A04 ABS/TCS/VDC SYSTEM

# DTC Logic

INFOID:000000008840733

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DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
C1A04	VDC CIRCUIT	ITS control unit receives the message that means "VDC is failed" from ABS actuator and electric unit (control unit).	<ul> <li>ABS actuator and electric unit (control unit)</li> <li>ITS control unit</li> </ul>
TC CONF	IRMATION PROCE	DURE	
.PERFOF	RM DTC CONFIRMATI	ON PROCEDURE	
2. Perform 3. Check i s "C1A04" (	hition ON. n "All DTC Reading" wit f the "C1A04" is detect detected as the current Refer to <u>DAS-40, "Dia</u>	ed as the current malfunction in "Self Dia <u>: malfunction?</u>	agnostic Result" of "AVM".
	Inspection End.	-	
NO >>			INFCID:00000008840734
NO >> Diagnosis	Inspection End. S Procedure		
NO >> Diagnosis	Inspection End. S Procedure ABS ACTUATOR AND	ELECTRIC UNIT (CONTROL UNIT) SE	INFOID:000000008840734
NO >> Diagnosis CHECK Check if any s any DTC YES >>	Inspection End. S Procedure ABS ACTUATOR AND / DTC is detected in "S detected? Perform diagnosis on BRC-44, "DTC Index".	ELECTRIC UNIT (CONTROL UNIT) SE elf Diagnostic Result" of "ABS". the detected DTC and repair or replace	ELF-DIAGNOSIS RESULTS
NO >> Diagnosis CHECK / Check if any s any DTC YES >> NO >>	Inspection End. S Procedure ABS ACTUATOR AND / DTC is detected in "S detected? Perform diagnosis on <u>BRC-44, "DTC Index"</u> . GO TO 2.	ELECTRIC UNIT (CONTROL UNIT) SE elf Diagnostic Result" of "ABS". the detected DTC and repair or replace	ELF-DIAGNOSIS RESULTS
NO >> Diagnosis L.CHECK / Check if any s any DTC YES >> NO >> 2.CHECK /	Inspection End. S Procedure ABS ACTUATOR AND / DTC is detected in "S detected? Perform diagnosis on <u>BRC-44, "DTC Index"</u> . GO TO 2. ALL UNIT SELF-DIANC	ELECTRIC UNIT (CONTROL UNIT) SE elf Diagnostic Result" of "ABS". the detected DTC and repair or replace	ELF-DIAGNOSIS RESULTS the malfunctioning parts. Refer to
NO >> Diagnosis I.CHECK / Check if any s any DTC YES >> NO >> 2.CHECK / Check if any s any DTC	Inspection End. S Procedure ABS ACTUATOR AND / DTC is detected in "S detected? Perform diagnosis on <u>BRC-44, "DTC Index"</u> . GO TO 2. ALL UNIT SELF-DIANC / DTC is detected exce detected?	ELECTRIC UNIT (CONTROL UNIT) SE elf Diagnostic Result" of "ABS". the detected DTC and repair or replace OSIS RESULTS ept for ITS control unit about VDC in "ALI	ELF-DIAGNOSIS RESULTS the malfunctioning parts. Refer to L DTC READING" with CONSULT.
NO >> Diagnosis I.CHECK / Check if any s any DTC YES >> NO >> 2.CHECK / Check if any s any DTC	Inspection End. S Procedure ABS ACTUATOR AND / DTC is detected in "S detected? Perform diagnosis on <u>BRC-44, "DTC Index"</u> . GO TO 2. ALL UNIT SELF-DIANC / DTC is detected exce detected?	ELECTRIC UNIT (CONTROL UNIT) SE elf Diagnostic Result" of "ABS". the detected DTC and repair or replace DSIS RESULTS	ELF-DIAGNOSIS RESULTS the malfunctioning parts. Refer to L DTC READING" with CONSULT.

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# C1A39 STEERING ANGLE SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

# C1A39 STEERING ANGLE SENSOR

# DTC Logic

INFOID:000000008840749

INFOID:000000008840750

[ITS CONTROL UNIT]

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
C1A39	STRG SEN CIR	ITS control unit receives the message that means "Steering angle sensor is failed" from steering angle sensor.	<ul><li>Steering angle sensor</li><li>ITS control unit</li></ul>

#### DTC CONFIRMATION PROCEDURE

# 1.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition ON.
- 2. Perform "All DTC Reading" with CONSULT.
- 3. Check if the "C1A39" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".

#### Is "C1A39" detected as the current malfunction?

- YES >> Refer to DAS-40, "Diagnosis Procedure".
- NO >> Refer to GI-47, "Intermittent Incident".

#### **Diagnosis** Procedure

1. CHECK STRG SENSOR SELF-DIAGNOSIS RESULTS

Check if any DTC is detected in "Self Diagnostic Result" of "ABS".

#### Is any DTC detected?

- YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. Refer to <u>BRC-44, "DTC Index"</u>.
- NO >> GO TO 2.

2. CHECK ALL UNIT SELF-DIANOSIS RESULTS

Check if any DTC is detected except for ITS control unit about ABS in "ALL DTC READING" with CONSULT. <u>Is any DTC detected except for ITS?</u>

- YES >> Replace steering angle sensor. Refer to <u>BRC-127</u>, "Removal and Installation".
- NO >> Replace ITS control unit. Refer to DAS-66, "Removal and Installation ITS Control Unit".

# **U0122 VDC P-RUN DIAG**

#### < DTC/CIRCUIT DIAGNOSIS >

U0122 VDC P-RUN DIAG

# DTC Logic

[ITS CONTROL UNIT]

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INFOID:000000008840737

	Trouble diagnosis name	DTC detecting condition	Possible causes
U0122	VDC P-RUN DIAG	ITS control unit receives the incorrect signal about P-RUN from VDC via V-CAN communication	ABS actuator and electric unit (control unit)
TC CONFIR	MATION PROCED	URE	
.PERFORM	DTC CONFIRMATIO	N PROCEDURE	
. Turn ignitio	on ON.		
	II DTC Reading" with	CONSULT. I as the current malfunction in self-diag	accie resulte of "AV/M"
	ected as the current m	Ū.	IUSIS IESUILS UI AVIVI .
	efer to <u>DAS-43, "Diagr</u>		
	fer to <u>GI-47, "Intermit</u>		
Diagnosis F	Procedure		INFOID:00000008840736
.CHECK AB	S ACTUATOR AND E	LECTRIC UNIT (CONTROL UNIT) SE	F-DIAGNOSIS RESULTS
		f Diagnostic Result" of "ABS".	
s any DTC def			
YES >> Pe	rform diagnosis on th	e detected DTC and repair or replace tl	ne malfunctioning parts.
NO >> G(	D TO 2.		
	CONTROL UNIT SE	LF-DIAGNOSIS RESULTS	
CHECK ITS		f Diagnostic Result" of "ABS".	
CHECK ITS	TC is detected in "Sel	f Diagnostic Result" of "ABS".	

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# **U0416 VDC CHECKSUM DIAG**

#### < DTC/CIRCUIT DIAGNOSIS >

# U0416 VDC CHECKSUM DIAG

# DTC Logic

INFOID:000000008840741

[ITS CONTROL UNIT]

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U0416	VDC CHECKSUM DIAG	ITS control unit receives the incorrect signal about P-RUN from VDC via V-CAN communication	ABS actuator and electric unit (control unit)

#### DTC CONFIRMATION PROCEDURE

# 1.PERFORM DTC CONFIRMATION PROCEDURE

#### 1. Turn ignition ON.

- 2. Perform "All DTC Reading" with CONSULT.
- 3. Check if the "U0416" is detected as the current malfunction in self-diagnosis results of "AVM".

#### Is "U0416" detected as the current malfunction?

- YES >> Refer to DAS-43, "Diagnosis Procedure".
- NO >> Refer to GI-47, "Intermittent Incident".

#### Diagnosis Procedure

INFOID:000000008840742

# 1. CHECK VDC UNIT SELF-DIAGNOSIS RESULTS

Check if any DTC is detected in "Self Diagnostic Result" of "ABS".

#### Is any DTC detected?

YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.

NO >> GO TO 2.

# 2. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) SELF-DIAGNOSIS RESULTS

Check if any DTC is detected in "Self Diagnostic Result" of "ABS".

#### Is any DTC detected?

- YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.
- NO >> Replace the ABS actuator and electric unit (control unit). Refer to <u>BRC-123</u>, "<u>Removal and Instal-</u> lation".

# **U0428 STEERING ANGLE SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

# **U0428 STEERING ANGLE SENSOR**

# DTC Logic

	Display contents of		
DTC	CONSULT	DTC detection condition	Possible malfunction factor
U0428	ST ANGLE SENSOR CALIBRATION [U0428]	The neutral position adjustment of the steering angle sensor is incomplete.	Adjust neutral position of the steering angle sensor.
Diagn	osis Procedure		INFOID:00000008840725
<b>1.</b> ADJ	UST THE NEUTRAL F	POSITION OF THE STEERING ANGLE SENSO	R
When L	J1232 is detected, adj	ust the neutral position of the steering angle sen	sor.
	>> Perform adjustme	ent of the neutral position of the steering angle s	sensor. Refer to <u>BRC-33, "CON-</u>
	SULT Function (A	<u>485)"</u> .	

INFOID:000000008840724

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#### < DTC/CIRCUIT DIAGNOSIS >

# U1000 CAN COMM CIRCUIT

# Description

#### CAN COMMUNICATION

CAN (Controller Area Network) is a serial communication line for real time applications. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Modern vehicle is equipped with many electronic control units, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN-H, CAN-L) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads the required data only. CAN communication signal chart. Refer to LAN-32, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart".

# 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.

# DTC Logic

INFOID:000000008660103

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U1000	CAN COMM CIRCUIT	If ITS control unit is not transmitting or receiving CAN communication signal or ITS communica- tion signal for 2 seconds or more	<ul><li>CAN communication system</li><li>ITS communication system</li></ul>

#### NOTE:

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If "U1000" is detected, first diagnose the CAN communication system.

# **Diagnosis** Procedure

INFOID:000000008660104

# **1.**PERFORM THE SELF-DIAGNOSIS

- 1. Turn the ignition switch ON.
- 2. Turn the MAIN switch of ITS system ON, and then wait for 30 seconds or more.
- 3. Perform "All DTC Reading" with CONSULT.
- 4. Check if the "U1000" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".

#### Is "U1000" detected as the current malfunction?

- YES >> Refer to <u>DAS-46</u>, "Description".
- NO >> Refer to GI-47, "Intermittent Incident".

INFOID:00000008660102

# U1010 CONTROL UNIT (CAN)

#### < DTC/CIRCUIT DIAGNOSIS >

# U1010 CONTROL UNIT (CAN)

#### Description

CAN controller controls the communication of CAN communication signal and ITS communication signal, and the error detection.

# DTC Logic

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes	D
U1010	CONTROL UNIT (CAN)	If ITS control unit detects malfunction by CAN controller initial diagnosis	ITS control unit	
				E

#### **Diagnosis** Procedure

# **1.**PERFORM DTC CONFIRMATION PROCEDURE

1. Turn the MAIN switch of ITS system ON.

2. Perform "All DTC Reading" with CONSULT.

3. Check if the "U1010" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".

#### Is "U1010" detected as the current malfunction?

YES >> Replace the ITS control unit. Refer to <u>DAS-66</u>, "Removal and Installation - ITS Control Unit".

NO >> Inspection End.

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INFOID:000000008660107

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# **U111A REAR CAMERA IMAGE SIGNAL CIRCUIT**

< DTC/CIRCUIT DIAGNOSIS >

# U111A REAR CAMERA IMAGE SIGNAL CIRCUIT

# DTC Logic

INFOID:000000008840745

[ITS CONTROL UNIT]

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U111A	REAR CAMERA IM- AGE SIGNAL	Rear camera image signal circuit is open or shorted	Check rear camera image signal circuit between rear camera and around view monitor control unit.

# **Diagnosis** Procedure

INFOID:000000008840746

Regarding Wiring Diagram information, refer to <u>DAS-22, "Wiring Diagram"</u>.

# 1. CHECK CONTINUITY REAR CAMERA POWER SUPPLY AND GROUND CIRCUIT

- 1. Turn the ignition switch OFF.
- 2. Disconnect the ITS control unit connector and rear camera connector.
- 3. Check for continuity between ITS control unit harness connector and rear camera harness connector.

ITS cor	ntrol unit	Rear Camera		Continuity
Connector	Terminal	Connector Terminal		Continuity
M59	51	B35	7	Yes
	52	555	8	163

4. Check for continuity between ITS control unit harness connector and ground.

ITS cor	ntrol unit		Continuity
Connector	Terminal	Ground	Continuity
M59	52		No

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the harness or connector.

# 2.CHECK VOLTAGE REAR CAMERA POWER SUPPLY

1. Connect the ITS control unit connector and rear camera connector.

2. Turn the ignition switch ON.

3. Check voltage between ITS control unit harness connector and ground.

	Terminal				
(+)			Condition	Voltage (Approx.)	
ITS control unit		(-)			
Connector	Terminal				
M59	52	Ground	"CAMERA" switch is ON or shift selector is in R (Reverse)	6.2 V	

Is inspection result normal?

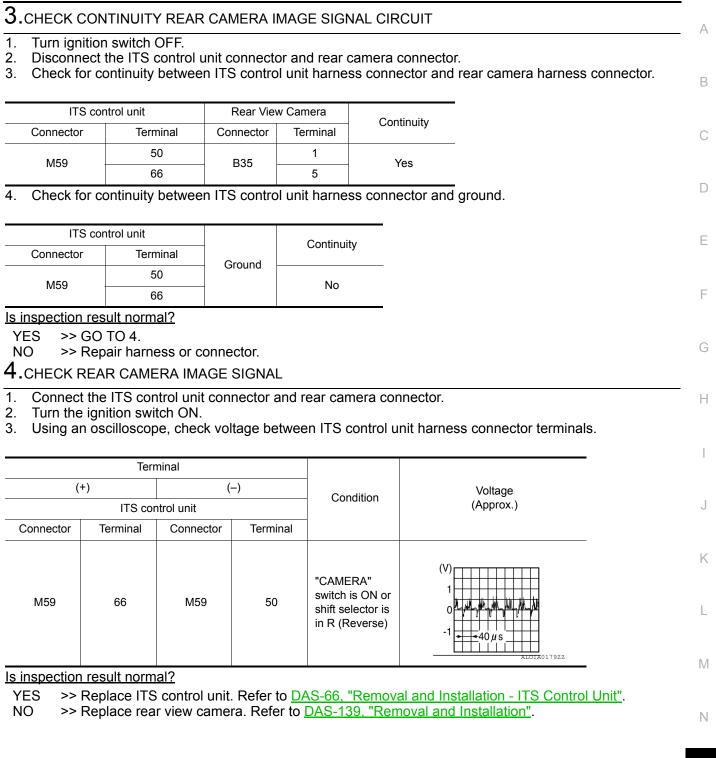
YES >> GO TO 3.

NO >> Replace ITS control unit. Refer to <u>DAS-66</u>, "Removal and Installation - ITS Control Unit".

# U111A REAR CAMERA IMAGE SIGNAL CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

[ITS CONTROL UNIT]



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# **U1232 STEERING ANGLE SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

# **U1232 STEERING ANGLE SENSOR**

# DTC Logic

INFOID:000000008840726

[ITS CONTROL UNIT]

DTC	Display contents of CONSULT	DTC detection condition	Possible malfunction factor
U1232	ST ANGLE SEN CALIB	The neutral position registration of the steering angle sensor cannot finish.	<ul><li>Steering angle sensor</li><li>ITS control unit</li></ul>

### **Diagnosis** Procedure

INFOID:000000008840727

**1**. REGISTER THE NEUTRAL POSITION OF THE STEERING ANGLE SENSOR

- 1. Turn the ignition switch ON.
- Perform registration of the neutral position of the steering angle sensor. Refer to <u>DAS-14, "CONSULT</u> <u>Function (AVM)"</u>.
- 3. Check "Self Diagnostic Result" of "AVM" with CONSULT. Refer to <u>DAS-14</u>, "CONSULT Function (AVM)". Is "ST ANGLE SEN CALIB" detected?

YES >> GO TO 2.

NO >> Inspection End.

2. CHECK STEERING ANGLE SENSOR

#### Check steering angle sensor.

Is the inspection result normal?

- YES >> Replace ITS control unit. Refer to DAS-66, "Removal and Installation ITS Control Unit".
- NO >> Repair or replace malfunctioning parts.

# U1305 CAMERA IMAGE CALIB

#### < DTC/CIRCUIT DIAGNOSIS >

U1305 CAMERA IMAGE CALIB

# DTC Logic

INFOID:000000008840752

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# DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U1305	CAMERA CONFIG	ITS control unit configuration is incomplete	Perform ITS configuration with CONSULT
Diagnosis	Procedure		INFOID:00000008840753
<b>1.</b> CHECK S	ELF-DIAGNOSIS RES	ULTS	
		Diagnostic Result" of "AVM".	
<u>s "U1305" de</u> YES >> F		ion using CONSULT Refer to DAS	-14, "CONSULT Function (AVM)". If
r	problem persists, repair	or replace the malfunctioning part.	
NO >> F	Refer to <u>GI-47, "Intermit</u>		

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# **U1308 CAMERA CONFIG**

#### < DTC/CIRCUIT DIAGNOSIS >

# U1308 CAMERA CONFIG

# DTC Logic

INFOID:000000008841686

[ITS CONTROL UNIT]

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U1308	ITS CALIB [U1308]	ITS control unit calibration is incomplete	Perform ITS calibration with CONSULT

#### **Diagnosis** Procedure

INFOID:00000008841687

# 1. CHECK SELF-DIAGNOSIS RESULTS

Check if "U1308" is current in "Self Diagnostic Result" of "AVM".

#### Is "U1308" detected?

YES >> Perform ITS calibration of camera image using CONSULT. Refer to <u>DAS-14</u>, "<u>CONSULT Function</u> (<u>AVM</u>)".

NO >> Refer to <u>GI-47</u>, "Intermittent Incident".

# **U1309 PUMP UNIT CURRENT**

#### < DTC/CIRCUIT DIAGNOSIS >

DTC DETECTION LOGIC

# U1309 PUMP UNIT CURRENT

# DTC Logic

[ITS CONTROL UNIT]

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INFOID:000000008660108

DTC	Trouble dia	gnosis name		DTC de	tecting condition		Possible causes
U1309	PUMP UNI	T CURRENT			ects the value of unit is incorrect	current	<ul><li>Rear view camera washer control unit</li><li>Harness</li><li>ITS control unit</li></ul>
TC CONFIF	RMATION	PROCED	URE				
.PERFORM	I DTC CON	FIRMATIC	N PROC	EDURE			
. Turn igniti	on switch (	ON.					
	All DTC Re				nalfunction in	"Salf Dia	gnostic Result" of "AVM".
s "U1309" def							ghostic Result of Avivi .
YES >> R	efer to DAS	<u>S-53, "Diag</u>					
NO >> In	spection E	nd.					
iagnosis I	Procedu	re					INFOID:00000008841744
egarding Wi	ring Diagra	m informat	ion, refer	to DAS-	-22, "Wiring D	iagram".	
.CHECK RE	EAR VIEW	CAMERA	AIR PUM	Р МОТС	OR POWER S		CIRCUIT
					unit connecto		
. Turn the ig	gnition swit	ch ON.					
. Check vol	ltage betwe	en rear vie	ew camer	a washe	er control unit	connecto	r and ground.
	Terminal					-	
(+)			_		Valtaga		
Rear view cam		(-)	Condition	lition	tion Voltage (Approx.)		
control Connector	Terminal						
B16	12	Ground	Ignitio	n ON	12 V	-	
s inspection r			.9			-	
	O TO 2.						
	epair the h						
CHECK RE	EAR VIEW	CAMERA	AIR PUM	Р МОТС	OR GROUND	CIRCUIT	-
	gnition swit		oar viow o	amora v	vashar oontro		postor and ground
	continuity						nector and ground.
Rear view came	era washer co	ntrol unit					
Connector	Term	ninal	Ground	Cont	tinuity		
B16	5	5		Y	es		
the inspection	on result n	ormal?					
	O TO 3.						
	epair the h						
UHECK CC		ITS CON	I KUL UN	IIIIOF	KEAR VIEW C	AMERA	WASHER CONTROL UNIT

1. Disconnect the ITS control unit connector.

# **DAS-53**

# **U1309 PUMP UNIT CURRENT**

#### < DTC/CIRCUIT DIAGNOSIS >

2. Check for continuity between ITS control unit harness connector and rear view camera washer control unit connector.

ITS cor	ntrol unit	Rear view ca control unit	mera washer	Continuity
Connector	Terminal	Connector	Terminal	
M58	2	B16	7	Yes
WJO	3	010	8	165

3. Check for continuity between ITS control unit harness connector and ground.

ITS cor	ntrol unit		Continuity	
Connector	Terminal	Ground	Continuity	
M58	2	Ground	No	
OCIVI	3		INU	

Is inspection result normal?

YES >> GO TO 4.

NO >> Repair the harness or connector.

#### **4.**CHECK CONTINUITY REAR VIEW CAMERA WASHER CONTROL UNIT TO PUMP

1. Disconnect rear view camera air pump connector.

2. Check for continuity between rear view camera washer control unit connector and pump connector.

Rear view camera	washer control unit	Rear view camera air pump motor		Continuity
Connector	Terminal	Connector	Terminal	
B16	1	B17	1	Yes
	2		2	163

3. Check for continuity between rear view camera washer control unit connector and ground.

Rear view camera	washer control unit		Continuity	
Connector	ector Terminal		Continuity	
B16	1	Ground	No	
ВТО	2		NO	

Is inspection result normal?

YES >> GO TO 5.

NO >> Repair the harness or connector.

**5.**CHECK REAR VIEW CAMERA AIR PUMP MOTOR ITS CONTROL UNIT SUPPLY CIRCUIT

Momentarily connect a jumper from a fused battery positive to terminal 1 and from ground to terminal 2 of the rear view camera air pump motor.

Does the pump operate?

YES >> GO TO 6.

NO >> Replace the rear view camera air pump motor.

 ${f 6}.$ CHECK REAR VIEW CAMERA AIR PUMP MOTOR ITS CONTROL UNIT SUPPLY CIRCUIT

- 1. Reconnect the ITS control unit connector.
- 2. Turn the ignition switch ON.
- 3. Using CONSULT, activate the rear view camera air pump while checking voltage between rear view camera washer control unit connector and ground.

# **U1309 PUMP UNIT CURRENT**

#### < DTC/CIRCUIT DIAGNOSIS >

	Terminal					
(+			1	\/alt===		
ar view car contro	mera washer ol unit	(—)	Condition	Voltage (Approx.)		
nnector	Terminals					
B16	7, 8	Ground	Activating pump	5 V		
	<u>be measure</u> Replace rea			ol unit.	val and Installation - ITS	Control Linit"
1	replace the			HO-00, Kellio		

# U130B REAR CAMERA COMM ERROR

#### < DTC/CIRCUIT DIAGNOSIS >

# U130B REAR CAMERA COMM ERROR

# DTC Logic

[ITS CONTROL UNIT]

INFOID:000000008841691

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U130B	REAR CAMERA COMM ERROR	ITS control unit receives the incorrect commu- nication signal from rear view camera.	<ul><li>Rear view camera</li><li>Harness</li><li>ITS control unit</li></ul>

#### DTC CONFIRMATION PROCEDURE

# 1.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- 2. Perform "All DTC Reading" with CONSULT.
- 3. Check if the "U130B" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".
- Is "U130B" detected as the current malfunction?
- YES >> Refer to DAS-57, "Diagnosis Procedure".
- NO >> Inspection End.

#### **Diagnosis** Procedure

INFOID:000000008841743

Regarding Wiring Diagram information, refer to DAS-22, "Wiring Diagram".

# 1.CONNECTOR CHECK

Check the ITS control unit and rear view camera connectors for the following:

- Proper connection
- Damage
- Disconnected or loose terminals

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

# 2. CHECK REAR VIEW CAMERA VOLTAGE

- 1. Connect ITS control unit and rear view camera harness connectors.
- 2. Check voltage between ITS control unit connector M59 and ground.

	Terminal			
(+) ITS control unit		(-)	Condition	Voltage (Approx.)
Connector	Terminal	(-)		(
M59	68	Ground	Ignition ON	5 V

Is the inspection result normal?

YES >> Replace the ITS control unit. Refer to DAS-66, "Removal and Installation - ITS Control Unit".

NO >> Replace rear view camera. Refer to DAS-139. "Removal and Installation".

# **U1310 PUMP UNIT CIRCUIT**

#### < DTC/CIRCUIT DIAGNOSIS >

DTC DETECTION LOGIC

# U1310 PUMP UNIT CIRCUIT

DTC Logic

INFOID:000000008841693

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	Trouble dia	agnosis name	DTC	detecting condition	Possible causes
U1310	PUMP UNI	T CIRCUIT		etects the value of voltage ol unit is incorrect	<ul><li>Rear view camera washer control unit</li><li>Harness</li><li>ITS control unit</li></ul>
TC CONFI	RMATION	PROCED	URE		
.PERFORM		FIRMATIO	N PROCEDUR	E	
	tion switch				
			CONSULT.	malfunction in "Self Dia	gnostic Result" of "AVM".
			nalfunction?		
			nosis Procedur	<u>e"</u> .	
	nspection E				
iagnosis	Procedu	re			INFOID:00000008841694
egarding W	ïring Diagra	ım informati	on, refer to <u>DA</u>	<u>S-22, "Wiring Diagram"</u> .	
.CHECK R	EAR VIEW	CAMERA A		TOR POWER SUPPLY	CIRCUIT
			a washer contr	ol unit connector.	
Turn the Check vo			w camera wasł	per control unit connecto	or and around
			w camera wasł	ner control unit connecto	or and ground.
			w camera wasł	ner control unit connecto	or and ground.
	Terminal		_		or and ground.
Check vo	Terminal ) nera washer		w camera wasł	Voltage (Approx.)	or and ground.
Check vo (+ Rear view car	Terminal ) nera washer	een rear vie	_	Voltage	or and ground.
Check vo (+ Rear view car contro	Ditage betwee Terminal ) nera washer I unit	een rear vie	_	Voltage	or and ground.
Check vo (+ Rear view car contro Connector B16 inspection	Terminal ) mera washer I unit Terminal 12 result norm	een rear vie (–) Ground	Condition	Voltage (Approx.)	or and ground.
Check vo (+ Rear view car contro Connector B16 inspection (ES >> 0	Terminal ) mera washer I unit Terminal 12 result norm GO TO 2.	een rear vie (–) Ground <u>al?</u>	Condition Ignition ON	Voltage (Approx.)	or and ground.
Check vo (+ Rear view car contro Connector B16 inspection YES >> C NO >> F	Terminal ) nera washer I unit Terminal 12 result norm GO TO 2. Repair the h	een rear vie (–) Ground <u>al?</u> arness or c	Condition Ignition ON	Voltage (Approx.) Battery voltage	
Check vo (+ Rear view car contro Connector B16 inspection YES >> C NO >> F .CHECK R	Terminal ) mera washer I unit Terminal 12 result norm GO TO 2. Repair the h EAR VIEW	een rear vie (–) Ground al? arness or c CAMERA A	Condition Ignition ON	Voltage (Approx.)	
Check vo (+ Rear view car contro Connector B16 inspection (ES >> C NO >> F .CHECK R Turn the	Terminal ) mera washer I unit Terminal 12 result norm GO TO 2. Repair the h EAR VIEW ignition swit	een rear vie (–) Ground al? arness or c CAMERA A tch OFF.	Condition Ignition ON Onnector. AIR PUMP MO	Voltage (Approx.) Battery voltage	Γ
Check vo (+ Rear view car contro Connector B16 inspection (ES >> C NO >> F .CHECK R Turn the	Terminal ) mera washer I unit Terminal 12 result norm GO TO 2. Repair the h EAR VIEW ignition swit	een rear vie (–) Ground al? arness or c CAMERA A tch OFF.	Condition Ignition ON Onnector. AIR PUMP MO	Voltage (Approx.) Battery voltage	Γ
Check vo (+ Rear view car contro Connector B16 inspection YES >> C NO >> F .CHECK R Turn the Check fo	Terminal Terminal Terminal Terminal 12 Tesult norm GO TO 2. Repair the h EAR VIEW ignition swit r continuity	(–) Ground <u>al?</u> arness or c CAMERA A tch OFF. between re	Condition Ignition ON Onnector. AIR PUMP MO <sup>-</sup> ar view camera	Voltage (Approx.) Battery voltage	Γ
Check vo (+ Rear view car contro Connector B16 inspection (ES >> 0 NO >> F .CHECK R Turn the Check fo Rear view cam Connector	Terminal Terminal Terminal Terminal Terminal Terminal Terminal COTO 2. Repair the h EAR VIEW ignition swif r continuity Terminal	(-) Ground al? arness or c CAMERA A tch OFF. between re	Condition Ignition ON Onnector. AIR PUMP MO <sup>-</sup> ar view camera	Voltage (Approx.) Battery voltage	Γ
Check vo (+ Rear view car contro Connector B16 MO >> F CHECK R ChECK R Turn the Check fo Rear view cam Connector B16	Terminal Terminal Terminal Terminal Terminal Terminal Terminal Terminal COTO 2. Repair the h EAR VIEW ignition swift r continuity Terminal Terminal Terminal	(-) Ground al? arness or c CAMERA A tch OFF. between re	Condition Ignition ON Onnector. AIR PUMP MO <sup>-</sup> ar view camera	Voltage (Approx.) Battery voltage	Γ
Check vo (+ Rear view car contro Connector B16 inspection YES >> C NO >> F CHECK R CHECK R Turn the Check fo Rear view cam Connector B16 the inspect	Terminal Terminal Terminal Terminal Terminal Terminal Terminal Terminal Contro 2. Repair the h EAR VIEW Ignition swifter continuity Term washer continuity Term	(-) Ground al? arness or c CAMERA A tch OFF. between re	Condition Ignition ON Onnector. AIR PUMP MO <sup>-</sup> ar view camera	Voltage (Approx.) Battery voltage	Γ
Check vo (+ Rear view car contro Connector B16 inspection YES >> C NO >> F CHECK R Turn the Check fo Rear view cam Connector B16 the inspect YES >> C	Terminal Terminal Terminal Terminal Terminal Terminal Terminal Terminal COTO 2. Repair the h EAR VIEW ignition swift r continuity Terminal Terminal Terminal	(-) Ground al? arness or c CAMERA A tch OFF. between re ontrol unit ninal ormal?	Condition Ignition ON Ignition ON Onnector. AIR PUMP MO ar view camera Ground Co	Voltage (Approx.) Battery voltage	Γ

1. Disconnect the ITS control unit connector.

# **DAS-57**

# **U1310 PUMP UNIT CIRCUIT**

#### < DTC/CIRCUIT DIAGNOSIS >

2. Check for continuity between ITS control unit harness connector and rear view camera washer control unit connector.

ITS cor	ntrol unit	Rear view ca control unit	mera washer	Continuity	
Connector	Terminal	Connector	Terminal		
M58	2	B16	7	Yes	
M38	3	БЮ	8	res	

3. Check for continuity between ITS control unit harness connector and ground.

ITS cor	ITS control unit		Continuity	
Connector	Terminal	Ground	Continuity	
M58	2	Ground	No	
MISO	3		No	

Is inspection result normal?

YES >> GO TO 4.

NO >> Repair the harness or connector.

#### **4.**CHECK CONTINUITY REAR VIEW CAMERA WASHER CONTROL UNIT TO PUMP

1. Disconnect rear view camera air pump connector.

2. Check for continuity between rear view camera washer control unit connector and pump connector.

Rear view camera	washer control unit	Rear view ca pump motor	imera air	Continuity	
Connector	Terminal	Connector	Terminal		
B16	1	B17	1	Yes	
	2		2	fes	

3. Check for continuity between rear view camera washer control unit connector and ground.

Rear view camera	washer control unit		Continuity
Connector	Terminal	Ground	Continuity
<b>P16</b>	1	Ground	No
B16	2		INO

Is inspection result normal?

YES >> GO TO 5.

NO >> Repair the harness or connector.

**5.**CHECK REAR VIEW CAMERA AIR PUMP MOTOR ITS CONTROL UNIT SUPPLY CIRCUIT

Momentarily connect a jumper from a fused battery positive to terminal 1 and from ground to terminal 2 of the rear view camera air pump motor.

Does the pump operate?

YES >> GO TO 6.

NO >> Replace the rear view camera air pump motor.

 ${f 6}.$ CHECK REAR VIEW CAMERA AIR PUMP MOTOR ITS CONTROL UNIT SUPPLY CIRCUIT

- 1. Reconnect the ITS control unit connector.
- 2. Turn the ignition switch ON.
- 3. Activate the rear view camera air pump while checking voltage between rear view camera washer control unit connector and ground.

# **U1310 PUMP UNIT CIRCUIT**

#### < DTC/CIRCUIT DIAGNOSIS >

(+)       Condition       Voltage (Approx.)         2onnector       Terminals       (-)       Condition         B16       7.8       Ground       Activating pump       5 V         n voltage be measured on either terminal?       ES       >> Replace rear view camera washer control unit.         S       >> Replace rear view camera washer control unit.       O       >> Replace the ITS control unit. Refer to DAS-66, "Removal and Installation - ITS Control Unit"
control unit     (-)     (+)       Connector     Terminals     Image: Control unit       B16     7, 8     Ground     Activating pump     5 V       n voltage be measured on either terminal?
B167, 8GroundActivating pump5 Vn voltage be measured on either terminal?
n voltage be measured on either terminal?

#### < DTC/CIRCUIT DIAGNOSIS >

[ITS CONTROL UNIT]

INFOID:00000008660110

# POWER SUPPLY AND GROUND CIRCUIT

### Diagnosis Procedure

Regarding Wiring Diagram information, refer to DAS-22. "Wiring Diagram".

# 1. CHECK ITS CONTROL UNIT POWER SUPPLY CIRCUIT

Check voltage between ITS control unit harness connector and ground.

	Terminal	Condition		
(+)		(–)	Condition	Voltage
ITS control unit			Ignition	(Approx.)
Connector	Terminal	Ground	switch	
	20 39		OFF	Battery voltage
M58			ON	Battery voltage
10100			OFF	0 V
			ON	Battery voltage

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the ITS control unit power supply circuit.

2. CHECK ITS CONTROL UNIT GROUND CIRCUIT

1. Turn the ignition switch OFF.

2. Disconnect the ITS control unit connector.

3. Check for continuity between ITS control unit harness connector and ground.

ITS cor	ntrol unit		Continuity
Connector	Terminal	Ground	Continuity
M58	40		Yes

Is the inspection result normal?

YES >> Inspection End.

NO >> Repair the ITS control unit ground circuit.

< DTC/CIRC			ING SY	STEMS S	NITCH CIRCUIT [ITS CONTROL UNIT]	
WARNIN			VITCH	CIRCUIT	<u> </u>	
Compone	nt Functio	on Check			INFOID:00000008931701	A
1.снеск и	VARNING S	SYSTEMS S	WITCH INF	PUT SIGNAL		E
2. Select th		ONITOR item			ith CONSULT. Ionitor status.	C
Monitor item		Condition		Monitor status	-	
	Warning sys	tems switch is	pressed	On	_	E
ITS SW 1	Warning sys	tems switch is	not pressed	OFF	_	
Is the inspec	tion result n	ormal?			-	
		stems switch S-61, "Diagr				
Diagnosis	Procedu	re			INFOID:00000008931702	ſ
1.снеск и		SYSTEMS S		DAS-22, "WI	ring Diagram".	(
			trol unit ha	rness connec	tor and ground.	
	Terminals		0		-	
(+	+)	(-)	Condition	Voltage		
ITS con Connector	trol unit Terminal	Ground	Warning systems switch	(Approx.)		
M58	32		Pressed	0 V	_	
IVIDO	32		Released	12 V	_	
Is the inspec	tion result n	ormal?			-	
	Replace the GO TO 2.	ITS control	unit. Refer	to <u>DAS-66, "</u>	Removal and Installation - ITS Control Unit".	
2.снеск и	VARNING S	SYSTEMS S	WITCH			
2. Remove		stems switch		AS-62, "Com	ponent Inspection".	
Is the inspect		ormal?				
	GO TO 3. Replace the	warning sys	stems swite	ch. Refer to <u>D</u>	AS-138, "Removal and Installation".	D
3.CHECK V	VARNING S	SYSTEMS S	WITCH GF	ROUND CIRC	UIT	
					onnector terminal and ground.	
Warning	g system switcl	h			-	
	, .,			Continuit		

Warning system switch			Continuity
Connector	Terminal	Ground	Continuity
M62	8		Yes

Is the inspection result normal?

YES >> GO TO 4.

# WARNING SYSTEMS SWITCH CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

#### NO >> Repair harness or connector.

#### **4.**CHECK WARNING SYSTEMS SWITCH SIGNAL INPUT CIRCUIT FOR OPEN

- 1. Disconnect the ITS control unit connector.
- Check continuity between the ITS control unit harness connector and warning system switch harness connector.

ITS cor	ntrol unit Warning system switch Contin		Warning system switch	
Connector	Terminal	Connector	Terminal	Continuity
M58	32	M62	6	Yes

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair the harnesses or connectors.

5. CHECK WARNING SYSTEMS SWITCH SIGNAL INPUT CIRCUIT FOR SHORT

Check continuity between the ITS control unit harness connector and ground.

ITS cor	ntrol unit		Continuity	
Connector	Terminal	Ground	Continuity	
M58	32	*	No	

Is the inspection result normal?

YES >> Replace the ITS control unit. Refer to DAS-66, "Removal and Installation - ITS Control Unit".

NO >> Repair the harnesses or connectors.

# Component Inspection

INFOID:000000008931703

# 1. CHECK WARNING SYSTEMS SWITCH

Check continuity of warning systems switch.

Terminal		Condition	Continuity
6 8	8	When warning systems switch is pressed	Yes
	0	When warning systems switch is released	No

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace the warning systems switch. Refer to DAS-138, "Removal and Installation".

< DTC/CIRCUIT		_	SYSIEM	IS ON IN	[ITS CONTROL UNIT]
WARNING S					
					INFOID:000000008931704
<b>1.</b> CHECK WAR				DR	
<ol> <li>Turn the igni</li> <li>Select the ac</li> <li>With operating</li> </ol>	ctive test iter	n "BSW			M" with CONSULT.
On : W	arning syst	ems ON	l indicator	illuminates	
Off : W	arning syst	ems ON	l indicator	is turned Ol	F
Is the inspection YES >> Inspection	<u>result norma</u> ection End.	<u>al?</u>			
	r to <u>DAS-63</u>	, "Diagn	osis Proced	lure".	
Diagnosis Pro	ocedure				INFOID:00000008931705
C					
Regarding Wiring	n Diagram in	formatio	n refer to r	)AS-22 "\//ir	ng Diagram"
	y Diagrann In	ornauo	, וכוכו נט <u>ב</u>	<u>2110-22, VVII</u>	ng Diagrann.
1.CHECK WAR	NING ON IN		OR POWER	SUPPLY CI	RCUIT
1. Turn ignition	switch OFF.				
2. Disconnect v	varning syst		ch connecto	r.	
<ol> <li>Turn ignition</li> <li>Check voltact</li> </ol>		varning	system swit	tch harness o	onnector and ground.
	•	0	,		5
	Terminals	Ĩ			
(+)			(-)	Voltage	
Warning syst	em switch			Voltage (Approx.)	
Warning syst	em switch Terminal	G	round	(Approx.)	
Warning syst Connector M62	em switch Terminal 5		round	0	
Warning syst       Connector       M62       Is the inspection	em switch Terminal 5 result norma		round	(Approx.)	
Warning syst       Connector       M62       Is the inspection       YES     >> GO       NO     >> Repart	em switch Terminal 5 result norma TO 2. air the warni	al? ng syste	round E ms ON indi	(Approx.) Battery voltage	supply circuit.
Warning syst       Connector       M62       Is the inspection       YES     >> GO	em switch Terminal 5 result norma TO 2. air the warni	al? ng syste	round E ms ON indi	(Approx.) Battery voltage	
Warning syst         Connector         M62         Is the inspection         YES       >> GO         NO       >> Repairs         2.CHECK WAR         1.       Turn ignition	em switch Terminal 5 result norma TO 2. air the warni NING SYST switch OFF.	al? ng syste EMS ON	round E ms ON india	(Approx.) Battery voltage cator power s DR SIGNAL F	
Warning syst         Connector         M62         Is the inspection         YES       >> GO         NO       >> Repairs         2.CHECK WAR         1. Turn ignition         2. Disconnect to	em switch Terminal 5 result norma TO 2. air the warni NING SYST switch OFF. he ITS contr	al? ng syste EMS ON	round ms ON india N INDICATC arness coni	(Approx.) Battery voltage cator power = DR SIGNAL F nector.	OR OPEN
Warning syst         Connector         M62         Is the inspection         YES       >> GO         NO       >> Repairs         2.CHECK WAR         1.       Turn ignition         2.       Disconnect to	em switch Terminal 5 result norma TO 2. air the warni NING SYST switch OFF. he ITS contr	al? ng syste EMS ON	round ms ON india N INDICATC arness coni	(Approx.) Battery voltage cator power = DR SIGNAL F nector.	
Warning syst         Connector         M62         Is the inspection         YES       >> GO         NO       >> Repa <b>2.</b> CHECK WAR         1.       Turn ignition         2.       Disconnect t         3.       Check contin nector.	em switch Terminal 5 result norma TO 2. air the warni NING SYST switch OFF. he ITS contr nuity betwee	al? EMS ON ol unit h n the ITS	round ms ON india N INDICATC arness cont S control uni	(Approx.) Battery voltage cator power = DR SIGNAL F nector.	OR OPEN
Warning syst         Connector         M62         Is the inspection         YES       >> GO         NO       >> Reparation         2.CHECK WAR         1. Turn ignition         2. Disconnect to         3. Check contrine         nector.	em switch Terminal 5 result norma TO 2. air the warni NING SYST switch OFF. he ITS contr nuity betwee	al? EMS ON ol unit h n the ITS	round Ems ON india N INDICATO arness conr S control unions stem switch	(Approx.) Battery voltage cator power = DR SIGNAL F nector.	OR OPEN
Warning syst         Connector         M62         Is the inspection         YES       >> GO         NO       >> Repa <b>2.</b> CHECK WAR         1.       Turn ignition         2.       Disconnect ti         3.       Check continnector.         ITS control u         Connector         Temperature	em switch Terminal 5 result norma TO 2. air the warni NING SYST switch OFF. he ITS contr nuity betwee	al? EMS ON ol unit h n the ITS /arning system	round ems ON india N INDICATO arness cont S control uni stem switch Terminal	(Approx.) Battery voltage cator power = DR SIGNAL F nector. it harness co	OR OPEN
Warning syst         Connector         M62         Is the inspection         YES       >> GO <sup>-</sup> NO       >> Repare <b>2.</b> CHECK WAR         1. Turn ignition         2. Disconnect till         3. Check contrine         ITS control u         Connector         Tem         M58	em switch Terminal 5 result norma TO 2. air the warni NING SYST switch OFF. he ITS contr nuity betwee nit  w mit Co 33	al? EMS ON ol unit h n the ITS /arning system /arning system	round Ems ON india N INDICATO arness conr S control unions stem switch	(Approx.) Battery voltage cator power a DR SIGNAL F nector. it harness co	OR OPEN
Warning syst         Connector         M62         Is the inspection         YES       >> GO         NO       >> Reparation         2.CHECK WAR         1. Turn ignition         2. Disconnect ti         3. Check contrine         Its control u         Connector         Temport         M58         Is the inspection         YES       >> GO	em switch Terminal 5 result norma TO 2. air the warni NING SYST switch OFF. he ITS contribuity betwee nit werminal Co 33 result norma TO 3.	al? EMS ON OI unit h n the ITS /arning sys nnector M62 al?	round ems ON india N INDICATO arness control uni S control uni stem switch Terminal 3	(Approx.) Battery voltage cator power = DR SIGNAL F nector. it harness co Continuity Yes	OR OPEN
Warning syst         Connector         M62         Is the inspection         YES       >> GO <sup>-</sup> NO       >> Repare <b>2.</b> CHECK WAR         1. Turn ignition         2. Disconnect till         3. Check continnector.         ITS control u         Connector         Tem         M58         Is the inspection         YES       >> GO <sup>-</sup> NO       >> Repare	em switch Terminal 5 result norma TO 2. air the warni NING SYST switch OFF. he ITS contr nuity betwee nit  werminal Co 33 result norma TO 3. air the harne	al? ng syste EMS ON ol unit h n the ITS /arning syste /arning syste M62 al? sses or	round ems ON india N INDICATO arness control units stem switch Terminal 3 connectors.	(Approx.) Battery voltage cator power : DR SIGNAL F nector. it harness co Continuity Yes	TOR OPEN
Warning syst         Connector         M62         Is the inspection         YES       >> GO <sup>-</sup> NO       >> Repare <b>2.</b> CHECK WAR         1. Turn ignition         2. Disconnect till         3. Check continnector.         ITS control u         Connector         Tem         M58         Is the inspection         YES       >> GO <sup>-</sup> NO       >> Repare	em switch Terminal 5 result norma TO 2. air the warni NING SYST switch OFF. he ITS contr nuity betwee nit  v erminal Co 33 CO 3. air the harne NING SYST	al? al? EMS ON OI unit h oI unit h n the ITS /arning system /arning sys	round ms ON india N INDICATO arness conr S control uni stem switch Terminal 3 connectors. N INDICATO	(Approx.) Battery voltage cator power : DR SIGNAL F nector. it harness co Continuity Yes	TOR OPEN

# WARNING SYSTEMS ON INDICATOR CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

ITS cor	ntrol unit		Continuity
Connector	Terminal	Ground	Continuity
58	33	Ť	No

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair the harnesses or connectors.

**4.**CHECK WARNING SYSTEMS ON INDICATOR

Check the warning systems ON indicator. Refer to DAS-64, "Component Inspection".

Is the inspection result normal?

- YES >> Replace the ITS control unit. Refer to DAS-66. "Removal and Installation ITS Control Unit".
- NO >> Replace warning systems switch. DAS-138, "Removal and Installation".

#### Component Inspection

INFOID:000000008931706

# 1. CHECK WARNING SYSTEMS ON INDICATOR

Apply battery voltage to warning systems switch terminals 3 and 5, and then check if the warning systems ON indicator illuminates.

Terminals			Warning sys-	
(+)	(-)	Condition	tems ON indica- tor	
5	3	When the battery voltage is applied	On	
5	5	When the battery voltage is not applied	Off	

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace the warning systems switch. Refer to <u>DAS-138</u>, "Removal and Installation".

# WARNING BUZZER CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >	[ITS CONTROL UNIT]
WARNING BUZZER CIRCUIT	
Component Function Check	INFOID:00000008931707
1.CHECK WARNING BUZZER	
<ol> <li>Turn the ignition switch ON.</li> <li>Select the active test item "BUZZER" of "BCM" with CONSULT.</li> <li>With operating the test item, check the operation.</li> </ol>	
On : Warning buzzer is activated. Off : Warning buzzer is not activated.	
Is the inspection result normal? YES >> Inspection End. NO >> Refer to <u>DAS-65, "Diagnosis Procedure"</u> .	
Diagnosis Procedure	INFOID:00000008931708
1. CHECK WARNING BUZZER OPERATION	
While activating the buzzer with CONSULT, listen for the buzzer sound.         Does warning buzzer sound?         YES       >> Replace the ITS control unit. Refer to DAS-66, "Removal and Installation"	on - ITS Control Unit".
NO >> Replace the combination meter (buzzer).	

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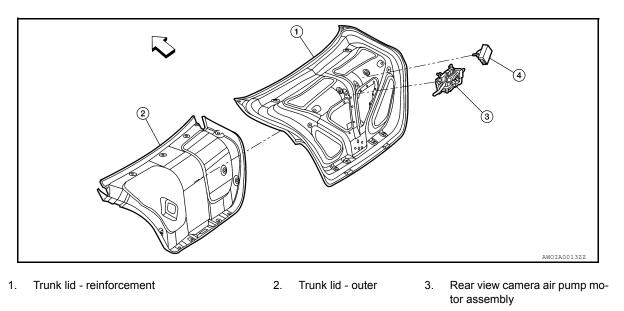
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# < REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION CONTROL UNIT

# Exploded View

INFOID:000000008942903



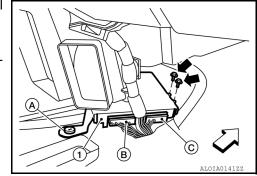
4. Rear view camera washer control unit

# Removal and Installation - ITS Control Unit

INFOID:000000008525000

#### REMOVAL

- 1. Disconnect the battery negative terminal. Refer to PG-72. "Removal and Installation (Battery)".
- 2. Remove the center console assembly. Refer to IP-18, "Removal and Installation".
- Disconnect the harness connectors (B,C) from the ITS control unit (1).
   <⊐: Front</li>
- 4. Remove bolts ( ) and plastic screw (A) that retain the ITS control unit (1) and remove.



#### INSTALLATION

Installation is in the reverse order of removal.

Removal and Installation - Rear View Camera Washer Control Unit

INFOID:000000008942904

#### **REMOVAL AND INSTALLATION**

#### Removal

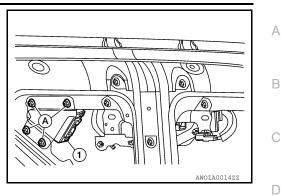
- 1. Remove the trunk lid finisher. Refer to INT-33, "TRUNK LID FINISHER : Removal and Installation".
- 2. Disconnect the harness connector from the rear view camera washer control unit.

# **CONTROL UNIT**

# < REMOVAL AND INSTALLATION >

# [ITS CONTROL UNIT]

- 3. Remove the rear view camera washer control unit nuts (A).
- 4. Remove the rear view camera washer control unit (1).



Installation Installation is in the reverse order of removal.

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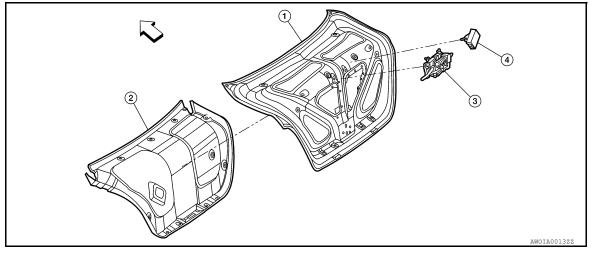
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# < REMOVAL AND INSTALLATION > AIR PUMP

**Exploded View** 

#### INFOID:000000008942905

INFOID:000000008942906



1. Trunk lid - reinforcement

Rear view camera washer control unit

2. Trunk lid - outer

⟨⊐ : Front

Rear view camera air pump motor assembly

3.

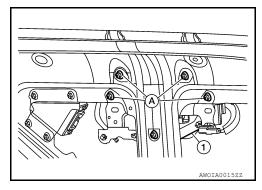
#### Removal and Installation

#### REMOVAL AND INSTALLATION

#### Removal

4.

- 1. Remove the trunk lid finisher. Refer to INT-33, "TRUNK LID FINISHER : Removal and Installation".
- 2. Disconnect the air tube from the rear view camera air pump motor.
- 3. Disconnect the harness connector from the rear view camera air pump motor.
- 4. Remove the rear view camera air pump motor bracket nuts (A).
- 5. Remove the rear view camera air pump motor assembly (1).



Installation Installation is in the reverse order of removal.

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INFOID:000000008527312

# PRECAUTION

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

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

#### WARNING:

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

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

#### WARNING:

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

# Precaution for Work

- 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.

# Precautions For Harness Repair

ITS communication uses a twisted pair line. Be careful when repairing it.

INFOID:000000008479650

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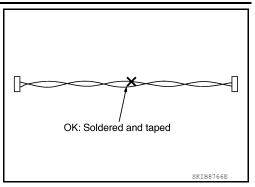
# PRECAUTIONS

#### < PRECAUTION >

INFOID:000000008942899

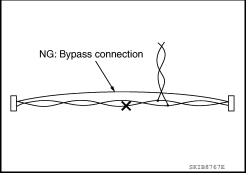
• Solder the repaired area and wrap tape around the soldered area. **NOTE:** 

A fray of twisted lines must be within 110 mm (4.33 in).



• Bypass connection is never allowed at the repaired area. **NOTE:** 

Bypass connection may cause ITS communication error. The spliced wire becomes separated and the characteristics of twisted line are lost.



Precaution for LDW System Service

WARNING:

Be cautious of traffic conditions and other vehicles when performing a road test. CAUTION:

- Never use the LDW system when driving with free rollers or a chassis dynamometer.
- Never disassemble or alter the rear view camera.
- Do not use the rear view camera when removed from the vehicle.
- Never disable the LDW system without the consent of the customer.

# PREPARATION

# -

Special	Service	Tool
opeoidi		1001

< PREPARATION >

PREPARATION

PREPARATION

The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here

Tool number (Kent-Moore No.) Tool name		Description	(
 (J-46534) Trim tool set		Removing trim components	
			E
	AWJIA04832Z		F

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[LDW]

INFOID:000000008542317

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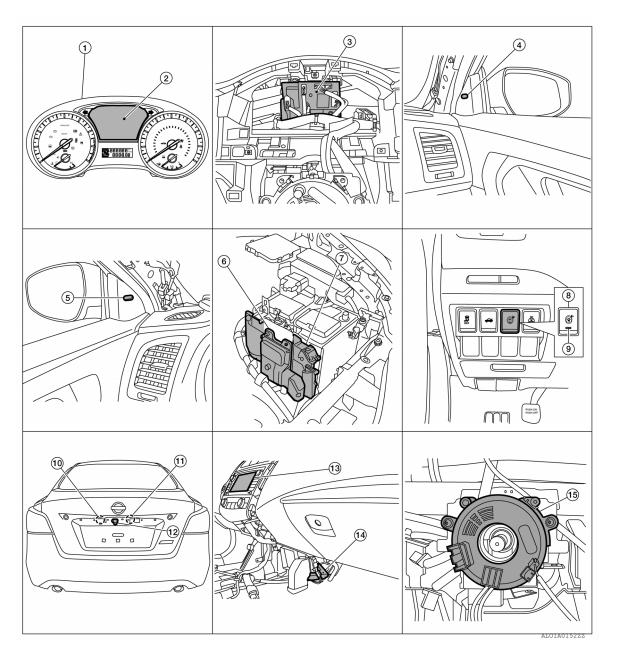
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#### < SYSTEM DESCRIPTION >

SYSTEM DESCRIPTION COMPONENT PARTS

# **Component Parts Location**

INFOID:000000008932603



- 1. Combination meter
- 4. Blind spot warning indicator RH
- 7. ECM
- 10. Rear view camera washer control unit
- 13. AV control unit (center display)
- 2. Vehicle information display
- 5. Blind spot warning indicator LH
- 8. Warning systems switch
- Rear view camera air pump motor
   ITS control unit
  - (view with center console removed)
- 3. BCM (view with combination meter removed)
- 6. TCM
- 9. Warning systems ON indicator
- 12. Rear view camera
- 15. Steering angle sensor (view with steering wheel removed)

# **COMPONENT PARTS**

## < SYSTEM DESCRIPTION >

# **Component Description**

INFOID:000000008479653

[LDW]

А

Component	Description
ITS control unit	<ul> <li>Judges the lane departure depending on the lane detection result and each signal</li> <li>Controls the warning buzzer and the warning systems ON indicator</li> <li>Transmits lane departure warning lamp signal to combination meter via CAN communication</li> </ul>
Warning systems switch	Inputs the warning systems switch signal to ITS control unit
Warning systems ON indicator (On the warning systems switch)	Turns on the warning systems ON indicator, according to a warning systems ON indicator sig- nal received from the ITS control unit
Rear view camera	<ul> <li>Detects the lane marker in travel lane</li> <li>Transmits the detected lane condition signal to ITS control unit via ITS communication</li> </ul>
ABS actuator and electric unit (control unit)	<ul> <li>Transmits vehicle speed signal to ITS control unit via CAN communication</li> <li>Transmits yaw rate signal/side G sensor signal to ITS control unit via CAN communication</li> </ul>
Buzzer (combination meter)	Activates the warning buzzer, according to a warning buzzer signal received from the ITS control unit
Combination meter	<ul> <li>Turns the Lane Departure Warning lamp ON/OFF according to the signals from ITS control unit via CAN communication</li> <li>Receives Lane Departure Warning ON indicator signal via CAN communication.</li> </ul>
Steering angle sensor	Transmits steering angle sensor signal to ITS control unit via CAN communication
ВСМ	<ul> <li>Transmits turn signal indicator to ITS control unit via CAN communication</li> <li>Transmits dimmer signal to ITS control unit via CAN communication</li> </ul>
ECM	Transmits engine speed signal to ITS control unit via CAN communication
тсм	Transmits the output shaft speed signal, input speed signal, current gear position signal and shift position signal to ITS control unit via CAN communication
AV control unit	Receives the various systems and camera signals via CAN communication and routes them to the center display
Center display	Displays the various system screen signals according to the priority level received via CAN communication
Rear view camera washer control unit	Controls the air pump to drive air to the rear camera lens according to the signals received from the ITS control unit
Rear view camera air pump motor	Drives air to the rear camera lens according to the signals received from the pump control uni

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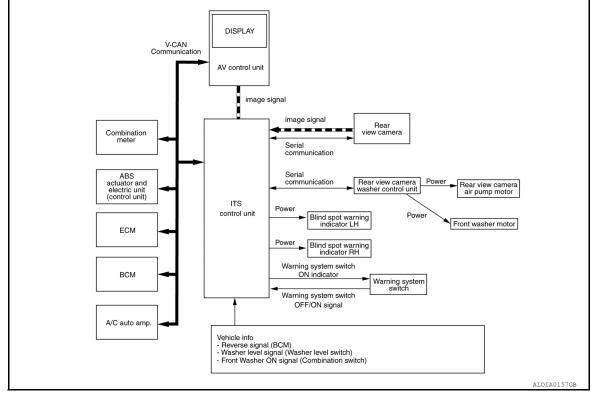
# SYSTEM

# System Description

INFOID:000000008479656

[LDW]

## SYSTEM DIAGRAM



## ITS CONTROL UNIT INPUT/OUTPUT SIGNAL ITEM

#### Input Signal Item

Transmit unit		Signal name	Description
BCM	CAN com- munica- tion	Turn indicator signal	Receives an operational state of the turn signal lamp and the hazard lamp
Rear view cam- era	ITS com- munica- tion	Detected lane condition signal	Receives detection results of lane marker
Warning sys- tems switch	Warning sy	stems switch signal	Receives an ON/OFF state of the warning systems switch

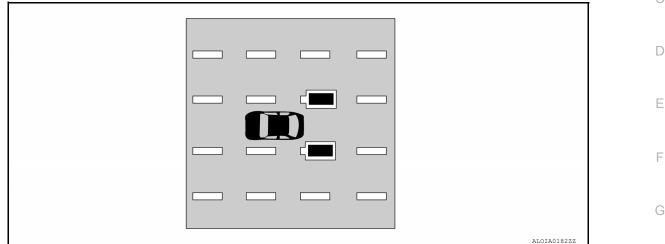
#### **Output Signal Item**

Reception unit	Signal name		Description
Combination meter	CAN commu- nication	Lane departure warning lamp signal	Transmits a lane departure warning lamp signal to turn ON the lane departure warning lamp
Rear view ITS commu-	ITS commu- nication	Vehicle speed signal	Transmits a vehicle speed calculated by the ITS con- trol unit
camera	mcation	Turn indicator signal	Transmits a turn indicator signal received from BCM
Warning buzz- er	Warning buzze	er signal	Activates the warning buzzer
Warning sys- tems ON indi- cator	Warning systems ON indicator signal		Turns ON the warning systems ON indicator

### FUNCTION DESCRIPTION

- Lane Departure Warning (LDW) system provides a lane departure warning function when the vehicle is driven at speeds of approximately 70 km/h (45 MPH) or more.
- When the vehicle approaches either the left or the right side of the traveling lane, a warning will sound and the lane departure warning lamp (orange) on the combination meter will blink to alert the driver.
- The warning does not occur during turn signal operation (Lane change side).
- The warning function will stop when the vehicle returns inside of the lane markers.

#### EXAMPLE



When the vehicle approaches the right lane marker, the driver is alerted by the buzzer and the blinking of lane departure warning lamp (orange).

#### **OPERATION DESCRIPTION**

- When the system is turned ON by operating the warning systems switch, ITS control unit turns ON the warning systems ON indicator.
- Rear view camera monitors lane markers of the traveling lane. It transmits the detected lane condition signal to ITS control unit via ITS communication.
- When judging from a lane marker detection signal that the vehicle is approaching the lane marker, the ITS control unit controls the following item to alert the driver.
- Activates warning buzzer
- ITS control unit transmits a lane departure warning lamp signal to combination meter via CAN communication and turns ON/OFF the lane departure warning lamp (orange).

#### OPERATING CONDITION

- Warning systems ON indicator: ON
- Vehicle speed: approximately 70 km/h (45 MPH) or more
- Turn indicator signal: After 2 seconds or more from turned OFF

#### NOTE:

- · When the LDW system setting on the vehicle information display is ON.
- After the operating conditions of warning are satisfied, the warning continues until the vehicle speed reaches approximately 60 km/h (40 MPH)
- The LDW system may not function properly, depending on the situation. Refer to <u>DAS-79</u>. "Precautions for <u>N</u> <u>Lane Departure Warning"</u>

### Bulb Check Action and Fail-safe Indication

M

[LDW]

Vehicle condition/ Driver's operation	Warning sys- tems ON indi- cator	Indication on the combination meter
Ignition switch OFF $\Rightarrow$ ON (Bulb check)	Approx. 5 sec. ON	ON (white)
When DTC is detected (Except "U1308")	ON	LDW OFF (orange)
Camera aiming is not completed ("U1308"is detected) <b>NOTE:</b> This is detected while driving the vehicle and the indication remains ON until the ignition switch is turned OFF	ON	LDW Malfunction See Owner's Manual
When rear camera needs cleaning	OFF	Unavailable: Clean Rear Camera
Temporary disabled status	OFF	LDW light (white) will blink
When the warning systems switch is pressed (When the settings of LDW system and BSW system on the vehicle information display is "OFF")	Blink	_

# Fail-safe (ITS Control Unit)

INFOID:000000008680985

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

System	Warning lamp/Indicator lamp	Description
Blind Spot Warning (BSW)	Blind Spot Warning lamp	Cancel
Lane Departure Warning (LDW)	Lane Departure Warning indicator	Cancel

## Fail-safe (Rear View Camera)

INFOID:000000008479658

## FAIL-SAFE CONTROL BY DTC

If a malfunction occurs in the rear view camera, ITS control unit cancels control, and turns ON the lane departure warning lamp in the combination meter.

### BSW/LDW TEMPORARY DISABLED STATUS

Under the following condition, the BSW and/or LDW system is turned off temporarily, the BSW light (white) and /or LDW light (white) will blink, and either of the following messages will appear in the vehicle information display:

• "trunk is open"

· "washer fluid is low"

When the above condition no longer exists, the BSW and /or LDW system will resume automatically.

# OPERATION

Swite	ch Name and Function		INFC	DID:000000008479662
			ALOIA0105	322
No.	Switch name	2	Description	
1	Warning systems switch	Turns LDW system ON/OFF (When the setting of LDW system or	the navigation system screen is ON)	
Meni	u Displayed by Pressin			DID:000000008479663
	CATOR LAMP AND WARN	-		
NDIC				
	<u> </u>		ALOIAO184	122
<u>No.</u>			Description	122
No. 1 2	<u> </u>	Indicates that the LDW and/or BSW Indicates that the LDW system is activa Turns ON when LDW system has Blinks when DTC is detected or sy Blinks when rear view camera blo	Description system is ON ted a malfunction ystem is temporarily disabled	122
1	Display item Warning systems ON indicator	<ul> <li>Indicates that the LDW and/or BSW</li> <li>Blinks when LDW system is activa</li> <li>Turns ON when LDW system has</li> <li>Blinks when DTC is detected or system</li> </ul>	Description system is ON ted a malfunction ystem is temporarily disabled	122
1 2 DISPI	Display item         Warning systems ON indicator         Lane departure warning lamp	<ul> <li>Indicates that the LDW and/or BSW</li> <li>Blinks when LDW system is activa</li> <li>Turns ON when LDW system has</li> <li>Blinks when DTC is detected or system</li> </ul>	Description system is ON ted a malfunction rstem is temporarily disabled ckage is detected	Buzzer

Ρ

# **OPERATION**

### < SYSTEM DESCRIPTION >

[LDW]

Vehicle c	ondition/ Driver's operation	Action	Warning sys- tems ON indi- cator	Indication on the combination meter	Buzzer
Approx. 70 km/h (45 MPH) or more	Close to lane marker	Warning • Buzzer sounds • Warning lamp blinks (orange)	ON	OFF (orange) Blink	Short con- tinuous beeps
	<ul> <li>Close to lane marker</li> <li>Turn signal ON (Deviate side)</li> </ul>	No action	ON	White	_

#### NOTE:

After the operating conditions of warning are satisfied, the warning continues until the vehicle speed reaches approximately 60 km/h (40 MPH). Refer to <u>DAS-74</u>, "System Description".

# HANDLING PRECAUTION

## Precautions for Lane Departure Warning

### REAR VIEW CAMERA HANDLING

The rear camera unit "1" for the LDW/BSW systems is located above the rear license plate.

To keep the proper operation of the LDW systems and prevent a system malfunction, be sure to observe the following:

- Always keep the camera lens clean. Be careful not to damage the nozzle of the automatic washer and blower.
- Do not attach "license plate accessories" that reflect light.
- Do not strike or damage the areas around the camera unit.

#### LANE DEPARTURE WARNING (LDW)

- LDW system is only a warning device to inform the driver of a potential unintended lane departure. It will not steer the vehicle or prevent loss of control. It is the driver's responsibility to stay alert, drive safely, keep the vehicle in the traveling lane, and be in control of the vehicle at all times.
- The camera unit may not detect properly under the following conditions:
- When towing a trailer.
- When strong light enters the camera unit. (For example, direct sunlight or headlight from the rear.)
- When ambient light changes instantly. (For example, when the vehicle enters or exits a tunnel or passes under a bridge.)
- Automatic washer and blower may not be able to secure detection capability when excessive dirt adheres on the camera lens.
- Excessive noise (e.g. audio system volume, open vehicle window) will interfere with the chime sound, and it
  may not be heard.
- The camera unit may not be able to detect properly under the following conditions:
- On roads where there are multiple parallel lane markers; lane markers that are faded or not painted clearly; yellow painted lane markers; non-standard lane markers; or lane markers covered with water, dirt or snow, etc.
- On roads where the discontinued lane markers are still detectable.
- On roads where there are sharp curves.
- On roads where there are sharply contrasting objects, such as shadows, snow, water, wheel ruts, seams or lines remaining after road repairs. (The LDW system could detect these items as lane markers.)
- On roads where the traveling lane merges or separates.
- When the vehicle's traveling direction does not align with the lane marker.
- When the road surface is very dark due to scarce ambient light or impaired tail lamp.
- When driving on a curved road, warning will be late on the outside of the curve due to the nature of the system.

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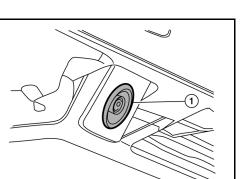
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# **DIAGNOSIS SYSTEM (ITS CONTROL UNIT)**

### < SYSTEM DESCRIPTION >

# DIAGNOSIS SYSTEM (ITS CONTROL UNIT)

## CONSULT Function (AVM)

INFOID:000000008842029

[LDW]

## APPLICATION ITEMS

CONSULT performs the following functions via CAN communication using ITS control unit.

Diagnosis mode	Description
Self Diagnostic Result	Displays the name of a malfunctioning system stored in the ITS control unit
Data Monitor	Displays ITS control unit input/output data in real time
Work support	Displays causes of automatic system cancellation occurred during system control
Active Test	Enables an operational check of a load by transmitting a driving signal from the ITS control unit to the load
ECU identification	Displays ITS control unit part number
Configuration	The vehicle specification can be written when replacing the ITS control unit

### SELF DIAGNOSTIC RESULT

Refer to DAS-86, "DTC Index".

### DATA MONITOR

Monitored item [Unit]	Description
ST ANGLE SENSOR SIGNAL [On/Off]	Indicates [On/Off] status as judged from ITS control unit (Angle sensor transmits angle signal through CAN communication)
REVERSE SIGNAL [On/Off]	Indicates [On/Off] status as judged from ITS control unit (TCM transmits reverse signal through CAN communication)
VEHICLE SPEED SIGNAL [On/Off]	Indicates vehicle speed calculated from ITS control unit through CAN communication [ABS ac- tuator and electric unit (control unit) transmits vehicle speed signal (wheel speed) through CAN communication]
CAMERA SWITCH SIGNAL [On/Off]	Indicates [On/Off] status of camera switch signal as judged from ITS control unit
CAMERA OFF SIGNAL [On/Off]	Indicates [On/Off] status of camera OFF signal as judged from ITS control unit
ST ANGLE SENSOR TYPE [Absolute/Not]	Indicates whether steering angle sensor type is absolute or not (ON means "controlling")
STEERING GEAR RATIO TYPE [Type 0/1]	Indicates the type of the steering gear ratio (type 1 or 2)
STEERING POSITION [LHD/RHD]	Indicates the steering position (LHD or RHD)
REAR CAMERA IMAGE SIGNAL [OK/Not]	Indicates the status of the rear camera image as read from ITS control unit through dedicated ITS communication lines
WASH SW [ON/OFF]	Indicates the state of the wash switch indicator output
R-CAMERA COMM STATUS [OK/Not]	Indicates the status of the rear camera communication status as read from ITS control unit through dedicated ITS communication lines
R-CAMERA COMM LINE [OK/Not]	Indicates the condition of the rear camera communication line whether transmitting properly through dedicated ITS communication lines
PUMP COMM STATUS [OK/NG]	Indicates the state of the communication signal from pump control unit
ILL [On/Off]	Indicates [On/Off] status of the illumination signal
ITS SW 1 [On/Off]	Indicates the state of the warning system switch as seen by the ITS control unit

# **DIAGNOSIS SYSTEM (ITS CONTROL UNIT)**

#### < SYSTEM DESCRIPTION >

[LDW]

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Monitored item [Unit]	Description	A
ITS SW 1 IND [On/Off]	Indicates the state of the warning system switch indicator output	
TURN SIGNAL [Left/N/Right]	Indicates [Left/N/Right] status of the turn signal output	В
Rear Camera Image Output signal [OK/NG]	Indicates the input state of video image from rear camera	С
ITS SW_2 [ON/OFF/No setting]	Indicates the state of the warning system secondary switch as seen by the ITS control unit	
ITS SW_2 IND [ON/OFF/No setting]	Indicates the state of the warning system secondary switch indicator output	D

#### WORK SUPPORT

Work support items	Description	
PREDICTIVE COURSE LINE DISPLAY	Setting whether predictive guide line displays or not	
INITIALIZE CAMERA IMAGE CALIBRATION	Start the initialization process of the rear camera	
STEERING ANGLE SENSOR ADJUSTMENT	Execute register neutral point of steering angle sensor	
CALIBRATING CAMERA IM- AGE (REAR CAMERA)	Displays the various values of the rear camera during the calibration process	
REAR WIDE-VIEW FIXED GUIDE LINE CORRECTION	Adjustment the position of fixed guide line on rear wide view	
REAR CAMERA ITS	Displays and sets camera image calibration values	
CAUSE OF LDW CANCEL	Displays the information about reason of LDW cancellation	
CAUSE OF BSW CANCEL	Displays the information about reason of BSW cancellation	

# ACTIVE TEST

### CAUTION:

- Never perform "Active Test" while driving the vehicle.
- The "Active Test" cannot be performed when the following systems warning indicators are illuminated:
- Lane Departure Warning indicator
- Blind Spot Warning indicator
- Place the shift selector to P (park) position, and then perform the test.

Test item		Description	M
WASH ACTIVE	ON	Activates the washer to clean the lens of rear camera	
WASH ACTIVE	OFF		N
LED LH	ON	Flashes the left side LED light for ITS system	
	OFF		
LED RH	ON	Flashes the right side LED light for ITS system	DAS
	OFF		
AIR ACTIVE	ON	Activates the air pump to clean the lens of rear camera	P
AIRACINE	OFF		Г
AIR & WASH ACTIVE	ON	Activates the air pump and washer to clean the lens of rear camera	
	OFF		

#### **BSW ON INDICATOR**

# **DIAGNOSIS SYSTEM (ITS CONTROL UNIT)**

### < SYSTEM DESCRIPTION >

Test item	Oper- ation	Description	Blind Spot Warning ON indicator lamp (Yellow)
BSW ON INDICATOR	Off	Stops transmitting the Blind Spot Warning ON indicator signal below to end the test	Off
BSW ON INDICATOR	On	Transmits the Blind Spot Warning ON indicator signal to the warning lamp on the door	ON
Washer	Off	Stops transmitting activate signal to washer below to end the test	Off
	On	Transmits activate signal to washer	ON
Air pump	Off	Stops transmitting activate signal to air pump below to end the test	Off
	On	Transmits activate signal to air pump	ON

### ECU IDENTIFICATION

ITS control unit part number is displayed.

### CONFIGURATION

The specifications of the vehicle can be written and read in the ITS control unit when replaced.

# < ECU DIAGNOSIS INFORMATION >

# ECU DIAGNOSIS INFORMATION ITS CONTROL UNIT

## **Reference Value**

## VALUES ON THE DIAGNOSIS TOOL

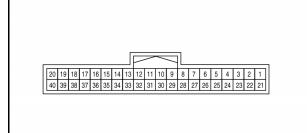
Monitor item		Condition	Value/Status	_
STEERING ANGLE	Ignition switch ON	Steering angle signal is received	On	_
STEERING ANGLE	Ignition switch ON	Steering angle signal is not received	Off	D
REVERSE SIGNAL	Ignition switch ON	Shift selector in R (reverse)	On	
REVERSE SIGNAL	Ignition switch Or	Shift selector is not in R (reverse)	Off	- E
VEHICLE SPEED	While driving	Vehicle speed signal is received	On	
VEHICLE OF LED	write driving	Vehicle speed signal is not received	Off	
CAMERA SWITCH	Ignition switch ON	Camera switch is pressed	On	F
	Ignition switch Or	Camera switch is not pressed	Off	
CAMERA OFF	Ignition switch ON	Purpose switch is pressed	On	_
SWITCH	Ignition switch ON	Purpose switch is not pressed	Off	G
TYPE OF STEER AN-	Ignition switch ON	Steering angle sensor type is displayed	Absolute	
GLE SENSOR	Ignition switch ON	Steering angle sensor type is not received	Not	Н
TYPE OF STEER	Ignition switch ON	Pattern 1 type of steering gear ratio displayed	Pattern 1	
GEAR RATIO		Pattern 2 type of steering gear ratio displayed	Pattern 2	
LEFT OR RIGHT	Ignition switch ON	It recognizes steering position is left	LHD	
STEER		It recognizes steering position is right	RHD	_
REAR CAMERA	Ignition switch ON	Rear camera serial status is OK	ОК	J
COMM STATUS	Ignition switch ON	Rear camera serial status is not OK	NG	
REAR CAMERA	Ignition outtob ON	Rear camera serial communication signal is received	OK	_
COMM LINE	Ignition switch ON	Rear camera serial communication signal is not received	NG	K
ILL	Ignition switch ON	Illumination is ON	On	
	Ignition switch ON	Illumination is OFF	Off	_
ITS SW_1	Ignition switch ON	ITS switch is pressed	On	
113 300_1	Ignition switch ON	ITS switch is not pressed	Off	
ITS SW 1 IND	Ignition switch ON	Indicator of ITS switch 1 is lighting	On	M
	Ignition switch ON	Indicator of ITS switch 1 is not lighting	Off	
		Turn signal left is received	Left	N
TURN SIGNAL	Ignition switch ON	Turn signal neutral is received	Ν	- N
		Turn signal right is received	Right	
R-CAMERA IMAGE	Ignition owitch ON	Camera image signal is received	On	DA
R-CAWERA IMAGE	Ignition switch ON	Camera image signal is not received	Off	
ITS SW_2	Ignition switch ON	For this vehicle, the displaying is fixed	No setting	_
ITS SW 2 IND	Ignition switch ON	For this vehicle, the displaying is fixed	No setting	P
WASH SWITCH SIG-	Ignition switch ON	Wash switch signal is pressed	On	_
NAL	Ignition Switch ON	Wash switch signal is not pressed	Off	
PUMP COMM STA-	Ignition switch ON	Pump communication signal is received	On	
TUS	Ignition switch ON	Pump communication signal is not received	Off	

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## < ECU DIAGNOSIS INFORMATION >

## **TERMINAL LAYOUT**



# PHYSICAL VALUES

	nal No. e color)	Description			Condition	Value
+	-	Signal name	Input/ Output		Condition	(Approx.)
1	Ground	Washer level switch	Input	Ignition	When washer fluid is low (switch closed)	0 V
(BR)	Ground		input	switch ON	When washer fluid is not low (switch open)	12 V
2 (Y)	Ground	Washer signal pump to camera	Input	Ignition swi	itch ON	5 V
3 (LG)	Ground	Washer signal camera to pump	Output	Ignition swi	itch ON	5 V
7 (P)	Ground	CAN -L		_	_	_
17	Ground	SOW LED signal R	Output	While	LDW/BSW detected	12 V
(G)	Giouna	SOW LED SIGNAL R	Output	driving	LDW/BSW is not detected	0 V
20 (G)	Ground	Battery supply	Input	_	_	12 V
22 (BR)	Ground	Serial ground	Output	_	_	0 V
27 (L)	Ground	CAN -H	_	_	_	—
28	Ground	Reverse	Input	Ignition	Shift selector in R (re- verse)	12 V
(R)	Ground	Kevelse	input	switch ON	Shift selector not in R (re- verse)	0 V
32	Ground	Cancel SW output	Input	Ignition	Cancel switch pressed	0 V
(P)	Giouna		Input	switch ON	Cancel switch not pressed	12 V
33	Cround		Output	Ignition	Warning system is ON	12 V
(BG)	Ground	LED input	Output	switch ON	Warning system is OFF	0 V
37	Ground	SOW LED signal L	Output	While	LDW/BSW detected	12 V
(W)	Giouna	SOW LED Signal L	Output	driving	LDW/BSW is not detected	0 V
39 (BG)	Ground	Ignition power supply	Input	Ignition swi	itch ON	Battery Voltage
40 (B)	Ground	Ground	_	_	_	0 V
50, 53	Ground	Shield	_	—	_	0 V
51 (R)	Ground	RR CAM GND	Output	Ignition switch ON	_	0 V



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# **ITS CONTROL UNIT**

#### < ECU DIAGNOSIS INFORMATION >

Terminal No. Description А (Wire color) Value Condition (Approx.) Input/ Signal name + Output В 52 RR CAM ON 6 V Ground Output Ignition switch ON (W) С (V 66 RR CAM COMP + Ignition switch ON Ground Input (B) D )179ZZ Ε 68 Ground **RR CAM CONT** Input Ignition switch ON 5 V (G) F 69 Ground RR CAM COMP + Input Ignition switch ON (B) 17922 Н

## Fail-safe

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

System	Buzzer	Warning Indicator lamp	Description	
Lane Departure Warning (LDW)	Low-pitched tone	Lane Departure Warning lamp	Cancel	J
Blind Spot Warning (BSW)	High-pitched tone	Blind Spot Warning lamp	Cancel	K
Moving Object Detection (MOD)	Low-pitched tone	Warning lamp MOD icon (on camera screen)	Cancel	

## **DTC Inspection Priority Chart**

If multiple DTCs are detected simultaneously, check them one by one depending on the following DTC inspection priority chart.

Priority	Detected items (DTC)	
1	U1000: CAN COMM CIRCUIT     U1010: CONTROL UNIT (CAN)	N
2	U1305: CAMERA IMAGE CALIB     U1308: CAMERA CONFIG	DAS
3	<ul> <li>C1A39: STRG SEN CIR</li> <li>U0428: STRG SEN CAN CIR 2</li> <li>U111A: REAR CAMERA IMAGE SIGNAL</li> <li>U1232: ST ANGLE SEN CALIB</li> <li>U1309: PUMP UNIT CURRENT</li> <li>U130B: REAR CAMERA COMM ERROR</li> <li>U1310: PUMP UNIT CIRCUIT</li> </ul>	P
4	<ul> <li>C1A03: VHCL SPEED SE CIRC</li> <li>C1A04: VDC FAIL</li> <li>U0122: VDC P-RUN DIAG</li> <li>U0416: VDC CHECKSUM DIAG</li> </ul>	



[LDW]

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# **ITS CONTROL UNIT**

#### < ECU DIAGNOSIS INFORMATION >

## **DTC Index**

[LDW]

#### NOTE:

- The details of time display are as follows:
- 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  $0 \rightarrow 1 \rightarrow 2 \cdots 38 \rightarrow 49$  after returning to the normal condition whenever the ignition switch OFF  $\rightarrow$  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.
  - Systems for fail-safe
  - A: Lane Departure Warning (LDW)
  - B: Blind Spot Warning (BSW)
  - C: Moving Object Detection (MOD)

DTC		١	Narning lam	ıp	Fail-safe	
CONSULT	CONSULT display	Lane Departure Warning	Blind Spot Warning	Moving Object Detection	System	Reference
C1A03	VHCL SPEED SE CIRC	ON	ON	ON	A, B, C	DAS-249
C1A04	VDC FAIL	ON	ON	ON	A, B, C	DAS-250
C1A39	STRG SEN CIR	ON	ON	ON	A, B, C	DAS-251
NO DTC IS DETECTED. FURTHER TESTING MAY BE RE- QUIRED	NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED	_	_	_	_	_
U0122	VDC P-RUN DIAG	ON	ON	ON	A, B, C	DAS-252
U0416	VDC CHECKSUM DIAG	ON	ON	ON	A, B, C	DAS-253
U0428	STRG SEN CAN CIR 2	ON	ON	ON	A, B, C	DAS-254
U1000 <sup>NOTE</sup>	CAN COMM CIRCUIT	ON	ON	ON	A, B, C	DAS-255
U1010	CONTROL UNIT (CAN)	ON	ON	ON	A, B, C	DAS-256
U111A	REAR CAMERA IMAGE SIGNAL	ON	ON	ON	A, B, C	<u>DAS-257</u>
U1232	ST ANGLE SEN CALIB	ON	ON	ON	A, B, C	DAS-259
U1305	CAMERA IMAGE CALIB	ON	ON	ON	A, B, C	DAS-260
U1308	CAMERA CONFIG	ON	ON	ON	A, B, C	DAS-261
U1309	PUMP UNIT CURRENT	ON	ON	ON	A, B, C	DAS-262
U130B	REAR CAMERA COMM ERROR	ON	ON	ON	A, B, C	DAS-265
U1310	PUMP UNIT CIRCUIT	ON	ON	ON	A, B, C	DAS-266

#### NOTE:

With the detection of "U1000" some systems do not perform the fail-safe operation.

# **ITS CONTROL UNIT**

#### < ECU DIAGNOSIS INFORMATION >

A system controlling based on a signal received from the control unit performs fail-safe operation when the communication with the ITS control unit becomes inoperable.

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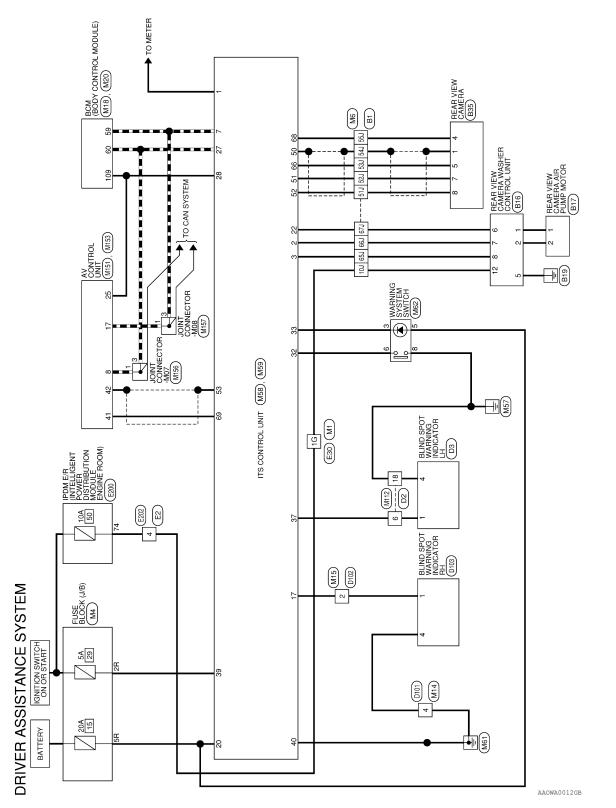
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INFOID:000000008674518

# WIRING DIAGRAM DRIVER ASSISTANCE SYSTEMS

# Wiring Diagram



# DRIVER ASSISTANCE SYSTEMS

< WIRING DIAGRAM >

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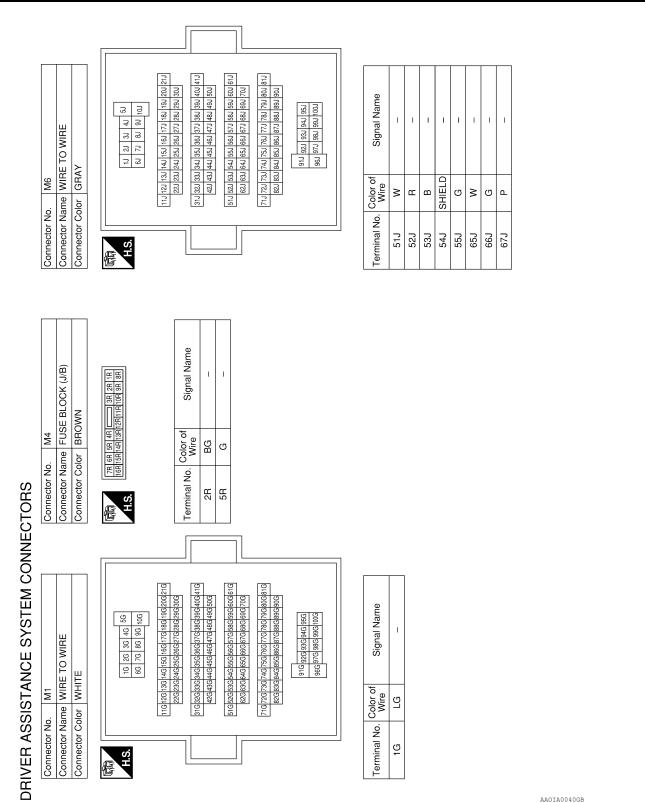
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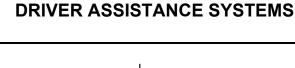


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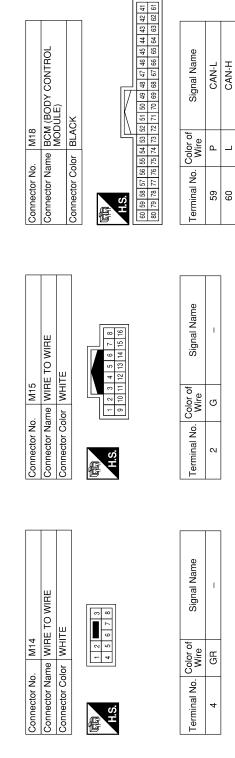


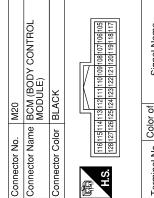
< WIRING DIAGRAM >



CAN-H

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Signal Name	REVERSE SIGNAL	
Color of Wire	G	
Terminal No.	109	

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M58 Terminal No. Color of Signal Name TS CONTROL I INIT	7 P CAN-L 24 –	8 - 25 -	9 - 26 -	10 – – – Z7 L CAN-H	11         -         28         R           11         -         -         28         R	8 7 6 5 4 3 2		Sinnal Name 31 - 31 - 31 - 31 - 31 - 31 - 31 - 31	Object Name         15         -         -         32         P         CANCEL SW OUTPUT	WASH LVL SW         16         -         -         33         BG         LED INPUT	17 G SOW LED SIGNAL R	ROM CAMERA 18 35 - 35 -	C/U TO PUMP 19 36 - 36 -	- 20 G B+ 37 W SOW LED SIGNAL L	- 21 - 38 -	- 22 P SERIAL GND 39 BG 39	23 40 B GND	Color of Color of Color of	ITS CONTROL UNIT I erminal No. Wire Signal Name I erminal No. Wire Signal Name	46 - 59 -	48 - 61 -	47 46 45	86 56 4 53 52 51 50 58 51 50 50 SHIELD - 63 - 63	51 R RR CAM GND 64 -	Similaria 65 - 65 -	53 SHIELD	54	- 55 68 G RR CAM CONT		
	-					15 14 13 12 11	39 34 33 32 3	Color of	Wire	BR	U	;	M	1	1	I						5 54 53 52 5	1 70 69 68 6		Color of	Wire	-	I	1	

**DRIVER ASSISTANCE SYSTEMS** 

### < WIRING DIAGRAM >

Revision: August 2012

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51	AV CONTROL UNIT (WITH BOSE AUDIO SYSTFM - WITH NAVI)	WHITE	2 6 7	13 14 15 16 17 18 <sup>20</sup>	Signal Name	CAN-H	CAN-L							57	JOINT CONNECTOR-M08 WHITE	-	0432110		Signal Name	1	1
o. M151				10 11 12 13	Color of Wire	_	٩							o. M157			4		Color of Wire	٩	₽
Connector No.	Connector Name	Connector Color	E	<b>5.1</b>	Terminal No.	ω	17							Connector No.	Connector Name Connector Color	Ą	中国 H.S.		Terminal No.	-	e
	WIRE TO WIRE WHITE		6         7         8         9         10         11         12           18         19         20         21         22         23         24		Signal Name	1	1								JOINT CONNECTOR-M07 WHITE		2 1 0		Signal Name	1	
M112			2 3 4 5 14 15 16 17		Color of Wire	×	в							M156			04321		Color of Wire	_	_
Connector No.	Connector Name Connector Color	4	H.S.		Terminal No.	Q	18							Connector No.	Connector Name Connector Color		田 H.S.		Terminal No.	-	ო
	Connector Name WARNING SYSTEM SWITCH Connector Color WHITE		321		Signal Name	1	1	1	1		I	1	1		AV CONTROL UNIT (WITH BOSE AUDIO SYSTEM - WITH NAVI)	Ш	]	25 26 27 28 29 30 31 32 37 38 39 40 41 42 43 44	Signal Name	REVERSE	CAMERA +
. M62	me WARNI lor WHITE		4		Color of Wire	æ	1	BG	m	g	Ч	1	В	. M153				21 22 23 24 33 34 35 36	Color of Wire	σ	m
Connector No.	Connector Name Connector Color		H.S.		Terminal No.	-	2	e	4	5	6	7	8	Connector No.	Connector Name	Connector Color	E	H.S.	Terminal No.	25	41

# DRIVER ASSISTANCE SYSTEMS

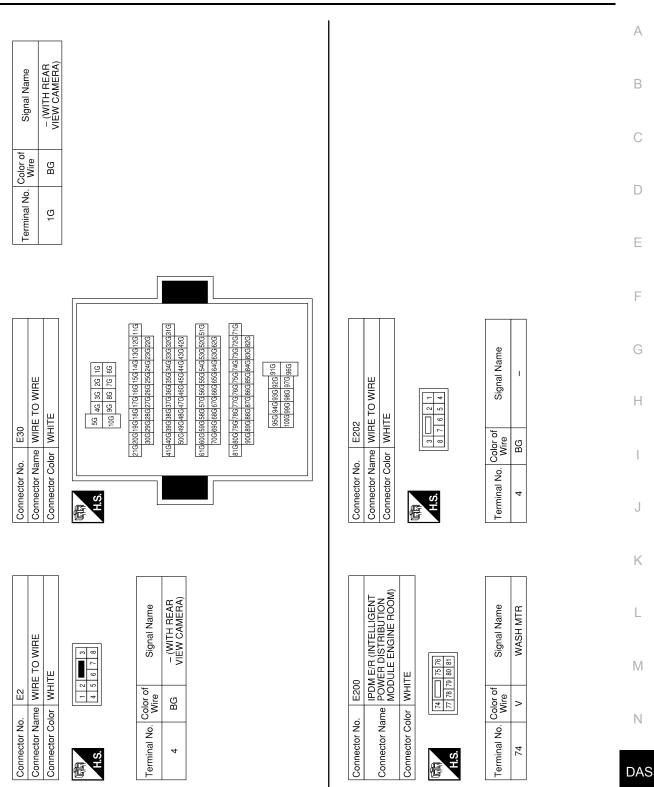
< WIRING DIAGRAM >

[LDW]



< WIRING DIAGRAM >

[LDW]



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Connector No. D103 Connector Name BLIND SPOT WARNING INDICATOR RH

Connector Color WHITE

Signal Name

Mire B

Terminal No. 1 2 3 4

. EHS.

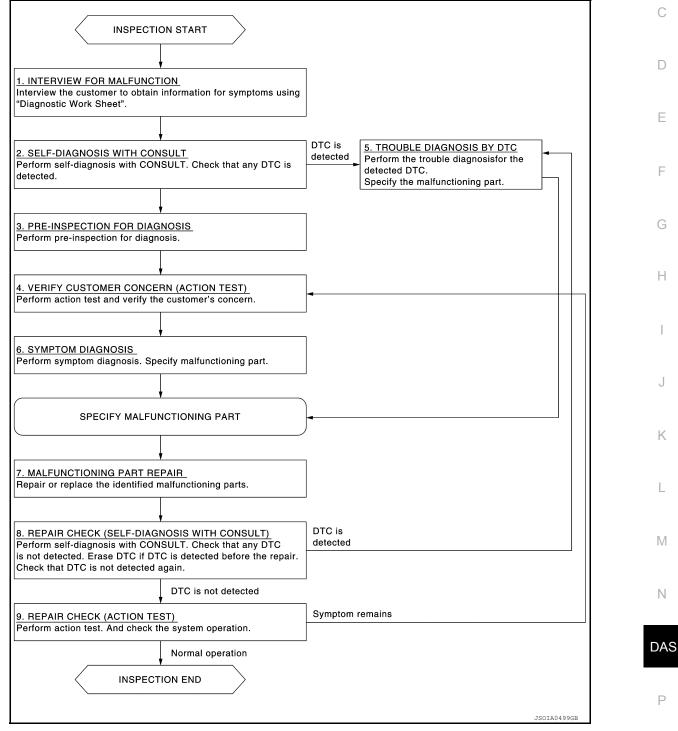
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**OVERALL SEQUENCE** 

# BASIC INSPECTION DIAGNOSIS AND REPAIR WORK FLOW

# Work Flow

INFOID:00000008842004



## DETAILED FLOW

## **1.**INTERVIEW FOR MALFUNCTION

Interview the customer to obtain information about symptoms using "Diagnostic Work Sheet". (Refer to <u>DAS-240, "Diagnostic Work Sheet"</u>.)

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## DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

>> 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 "AVM".

Is any DTC detected?

YES >> GO TO 5.

NO >> GO TO 3.

**3.** PRE-INSPECTION FOR DIAGNOSIS

Perform pre-inspection for diagnosis. Refer to DAS-242, "Inspection Procedure".

>> GO TO 4.

## **4**.ACTION TEST

Perform LDW system action test to check the operation status. Refer to DAS-33, "Description".

>> GO TO 6.

**5.**TROUBLE DIAGNOSIS BY DTC

Perform trouble diagnosis for the detected DTC. Specify a malfunctioning part. Refer to <u>DAS-20, "DTC Index"</u> (ITS CONTROL UNIT).

>> GO TO 7.

**6.**SYMPTOM DIAGNOSIS

Perform symptom diagnosis. Specify malfunctioning part. Refer to DAS-132, "Symptom Table".

>> GO TO 7.

7.MALFUNCTION PART REPAIR

Repair or replace the identified malfunctioning parts.

>> GO TO 8.

**8**.REPAIR CHECK (SELF-DIAGNOSIS WITH CONSULT)

Perform self-diagnosis with CONSULT. Check that any DTC is not detected. Erase DTC if DTC is detected before the repair. Check that DTC is not detected again.

Is any DTC detected?

YES >> GO TO 5. NO >> GO TO 9.

**9.**REPAIR CHECK (ACTION TEST)

Perform LDW system action test. Also check the system operation.

Does it operate normally?

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

Diagnostic Work Sheet

### DESCRIPTION

In general, each customer feels differently about an incident. It is important to fully understand the symptoms or conditions for a customer complaint.

There are many operating conditions that lead to the malfunction. A good grasp of such conditions can make troubleshooting faster and more accurate.

Some conditions may cause the lane departure warning lamp to stay ON.

## **DAS-96**

INFOID:000000008842005

## DIAGNOSIS AND REPAIR WORK FLOW

#### < BASIC INSPECTION >

Utilize a work sheet sample to organize all of the information for troubleshooting.

KEY POINTS

- WHAT..... System and functions
- WHEN..... Date, Frequencies
- WHERE..... Road conditions
- HOW..... Operating conditions, Symptoms

#### WORK SHEET SAMPLE

Customer name MR/MS		Model and Year		VIN		
Engine #		Trans.		Mileage		
Incident Date		Manuf. Date		In Service	Date	
Symptoms		1				
	Lane departure warning lamp	Stays ON Turned ON occasionally	☐ Stays y ☐ Othe		Blinks	)
Indicator/Warning lamps	Warning systems ON indicator	☐ Stays ON	☐ Stays ☐ Othe		Blinks	)
	□ Other lamps (   )	Stays ON Turned ON occasionally	☐ Stays y ☐ Othe		Blinks	)
	☐ When using LDW					
Functions	All functions do not oper Warning function does no Yawing function does not					
	Functions are untimely.	g the course in the turn sign function when driving on lar				
		s when driving in a lane. s in a different position from	the actual   )			
Conditions	Functions		the actual   )			
Conditions Frequency	Functions		)			
	Functions     Others (	s in a different position from	) ently	position.	ong light)	
Frequency Light conditions	Functions     Others (     Continuously     Not affected     In the daytime	s in a different position from	) ently	oosition.	ong light)	
Frequency Light conditions Driving conditions	Others (     Functions     Others (     Continuously     Not affected     Direct light     Not affected	s in a different position from  At night Backlight MPH (km/h) Raining	) ently □ Sunrise/s □ Others(	oosition.	ong light)	
Frequency Light conditions Driving conditions Weather conditions	Continuously     Others (     Continuously     Not affected     In the daytime     Direct light     Not affected     Vehicle speed     Not affected     Fine	s in a different position from Intermitte At night Backlight MPH ( km/h) Raining In town	) ently Sunrise/s Others ( Vehicle is	oosition.	ong light)	
Frequency	Functions     Others (     Continuously     Not affected     In the daytime     Direct light     Not affected     Vehicle speed     Not affected     Fine     Clouding     Not affected     Highway	s in a different position from Intermitte At night Backlight MPH ( km/h) Raining In town Winding roads	) ently Sunrise/s Others ( Vehicle is Snowing Others (	oosition.	ong light)	

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< BASIC INSPECTION >

# PRE-INSPECTION FOR DIAGNOSIS

**Inspection Procedure** 

INFOID:000000008842006

[LDW]

**1.**CHECK CAMERA LENS

Is camera lens contaminated with foreign materials?

YES >> Clean camera lens.

NO >> GO TO 2.

2. CHECK REAR VIEW CAMERA UNIT INSTALLATION CONDITION

Check rear view camera unit installation condition (installation position, properly fitted).

Is it properly installed?

YES >> GO TO 3.

NO >> Install rear view camera unit properly, and perform rear view camera calibration. Refer to <u>DAS-</u> <u>245. "Description"</u>.

3. CHECK VEHICLE HEIGHT

Check vehicle height. Refer to FSU-26, "Wheelarch Height (Unladen\*1)".

Is vehicle height appropriate?

YES >> Inspection End.

NO >> Repair vehicle to appropriate height.

## **ACTION TEST**

# < BASIC INSPECTION >

# ACTION TEST

ACTION	ITEST					Δ
Description	on				INFOID:000000008842007	А
	iction test to verify the cust iction test and check the sy			diagnosis.		В
Be careful CAUTION:		-		hen performing road test. ;;		С
<ul> <li>Precautic</li> <li>System d</li> <li>System d</li> <li>System d</li> <li>Handling</li> </ul>		D				
Inspectio	INFOID:000000008842008	E				
WARNING: Be careful CAUTION:		safety around	the vehicle w	hen performing road test.		F
<ul> <li>Fully und</li> <li>Precaution</li> </ul>	lerstand the following ite	recaution for Ll	DW System S	ervice".		G
- System d - System d - Handling	lescription for LDW: Refe lescription for BSW: Refe lescription for MOD: Refe precaution: Refer to DA LDW SYSTEM SETTING	er to <u>DAS-146,</u> er to <u>DAS-219,</u>	<u>"System Des</u> "System Des	<u>cription"</u> . <u>cription"</u> .		Η
1. Start th	e engine.	ng can be enable	ed/disabled or	the vehicle information dis	play	
3. Turn Ol	FF the ignition switch and that the previous setting is	wait for 30 seco	nds or more.			J
-	GO TO 2. TEST FOR LDW					K
2. Turn wa	the setting of the LDW sys arning systems switch ON the LDW operation accord	(warning system	ns ON indicate			L
Vehicle o	condition/ Driver's operation	Action	Warning sys- tems ON indi- cator	Indication on the combination meter	Buzzer	Μ
Loss than						Ν

Less than Approx. 60 Close to lane marker No action ON ... km/h (40 DAS MPH)  $White_{\tt ALOIA0191GB}$ Ρ

[LDW]

# **ACTION TEST**

#### < BASIC INSPECTION >

[LDW]	

Vehicle o	condition/ Driver's operation	Action	Warning sys- tems ON indi- cator	Indication on the combination meter	Buzzer
Approx. 70 km/h (45 MPH) or more	Close to lane marker	Warning <ul> <li>Buzzer sounds</li> <li>Warning lamp blinks</li> </ul>	ON	White (Orange) White Blink	Short contin- uous beeps
	<ul> <li>Close to lane marker</li> <li>Turn signal ON (Deviate side)</li> </ul>	No action	ON	White ALOIA0191GB	

### NOTE:

After the operating conditions of warning are satisfied, the warning continues until the vehicle speed reaches approximately 60 km/h (40 MPH). Refer to <u>DAS-74, "System Description"</u>.

>> Inspection End.

ADDITIONAL SERVICE WHEN REPLACING REAR VIEW CAMERA < BASIC INSPECTION > [LDW]
ADDITIONAL SERVICE WHEN REPLACING REAR VIEW CAMERA
Description
Always perform the calibration after removing and installing or replacing the rear view camera. <b>CAUTION:</b> <b>The system does not operate normally unless the rear view camera aiming adjustment is performed.</b> <b>Always perform it.</b>
Work Procedure
1.CAMERA AIMING ADJUSTMENT
Perform the camera aiming adjustment with CONSULT. Refer to DAS-245, "Description".
>> GO TO 2. 2.PERFORM SELF-DIAGNOSIS
Perform the self-diagnosis of rear view camera with CONSULT. Check if any DTC is detected.
<u>Is any DTC detected?</u> YES >> Perform the trouble diagnosis for the detected DTC. Refer to <u>DAS-86, "DTC Index"</u> . NO >> GO TO 3.
3.LDW/BSW SYSTEM ACTION TEST
<ol> <li>Perform the LDW/BSW system action test. Refer to <u>DAS-99, "Description"</u>.</li> <li>Check that the LDW/BSW system operates normally.</li> </ol>
Is the inspection result normal?         YES       >> Inspection End.         NO       >> GO TO 4.
4.LDW/BSW ACTIVE TEST
<ol> <li>Perform WASH ACTIVE on Active Test using CONSULT.</li> <li>Perform air and washer tube connection check by AIR &amp; WASH ACTIVE on Active Test:</li> </ol>
(1) Washer fluid output count on the rear view camera is 3 to 5 times $\rightarrow$ OK (2) Washer fluid output count on the rear view camera is 10 times $\rightarrow$ Check tube with yellow marking (3) Washer fluid output count on the rear view camera is 1 time $\rightarrow$ Check tube with green marking
(4) No washer fluid output $\rightarrow$ Check tube with blue marking or check valve
>> Inspection End.

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< BASIC INSPECTION >

# REAR VIEW CAMERA CALIBRATION

## Description

Always perform the calibration after removing and installing or replacing the rear view camera. **CAUTION:** 

- Place the vehicle on level ground when the calibration is performed.
- Follow the CONSULT when performing the calibration. (Rear view camera calibration cannot be operated without CONSULT).

## Work Procedure (Preparation)

INFOID:000000008842012

INFOID:00000008842011

[LDW]

### **1.**PERFORM SELF-DIAGNOSIS

Perform self-diagnosis of the ITS control unit.

Is any DTC detected?

Except "U1308">> Perform diagnosis on the detected DTC and repair or replace the applicable item. Refer to DAS-86. "DTC Index".

"U1308" or no DTC>>GO TO 2.

## 2.PREPARATION BEFORE REAR VIEW CAMERA CALIBRATION

#### NOTE:

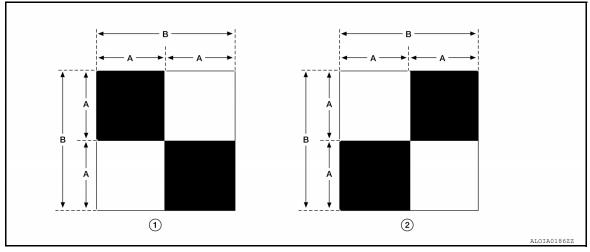
Select the "AVM" to diagnose the ITS control unit by CONSULT.

- 1. Perform pre-inspection for diagnosis. Refer to DAS-242, "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. Situate vehicle where the camera is exposed at an atmosphere temperature between 0°C (32°F) and 30°C (86°F)
- 6. Move the shift selector to P (Park) and release the parking brake.
- 7. Clean the rear view camera.

>> GO TO 3.

## **3.** PREPARATION OF CALIBRATION TARGET MARK

Prepare the calibration target mark according to the following figure:



#### (1) : Left and right targets

- (2) : Center target
- (A) : Side of the black or white area = 200 mm (7.87 in)
- (B) : Side of the square target
- = 400 mm (15.75 in)

< BASIC INSPECTION >

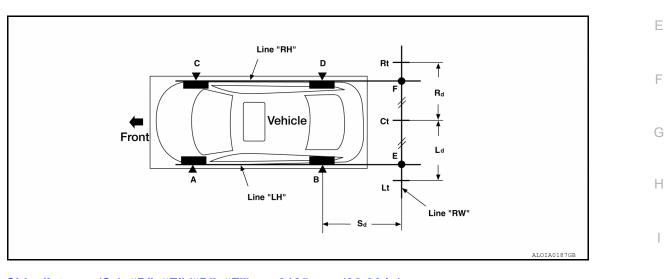
>> Refer to DAS-246. "Work Procedure (Target Setting)".

Work Procedure (Target Setting)

### **CAUTION:**

- Perform this operation in a horizontal position where there is a clear view for 3 m (9.84 ft) backward and 4 m (13.12 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 it shines by the reflected light of the sun or lighting.
- The target may not be detected when there is the same pattern of black and white as the target when the pattern is within 0.5 m (1.64 ft) from either side and upward/downward position from the target. (It is desirable that the vehicle is positioned on a single-color floor.)

## **1.**TARGET SETTING



Side distance (Sd): "B"–"E" ("D"–"F") : 2125 mm (83.66 in) Left distance (Ld): "Ct"–"Lt" : 1500 mm (59.06 in) Right distance (Rd): "Ct"–"Rt" : 1500 mm (59.06 in)

1. Mark points "A", "B", "C" and "D" at the center of the lateral surface of each wheel.

### 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 2.2 m (7.22 ft) or more at the rear from the rear axle.

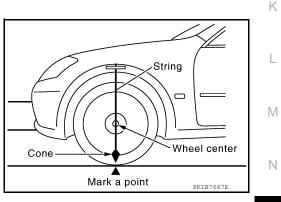
- 3. Mark point "E" on the line "LH" at the positions 2125 mm (83.66 in) from point "B".
- 4. Draw line "RH" passing through points "C" and "D" on the right side of vehicle in the same way as step 2.
- 5. Mark point "F" on the line "RH" at the positions 2125 mm (83.66 in) from point "D".
- 6. Draw line "RW" passing through the points "E" and "F" on the rear of the vehicle. **NOTE:**

Approximately 1.8 m (5.91 ft) or more at both left and right sides from vehicle center.

7. Mark point "Ct" at the center of point "E" and "F" on the line "RW". CAUTION:

#### Make sure that "E" to "Ct" is equal to "F" to "Ct".

- 8. Mark point "Lt" and "Rt" on the line "RW" at the positions 1500 mm (59.06 in) from point "Ct".
- 9. Position the center of the target mark to point of "Ct".



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## **DAS-103**

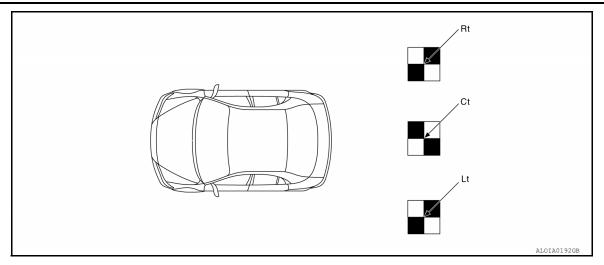
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< BASIC INSPECTION >



#### **CAUTION:**

Make sure that the black/white pattern of the center target is rotated as compared with the left and right targets.

>> Go to DAS-247, "Work Procedure (Rear View Camera Calibration)".

Work Procedure (Rear View Camera Calibration)

INFOID:000000008842014

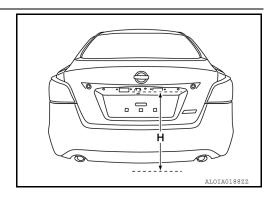
#### CAUTION:

Perform the calibration under the specified vehicle condition (fuel full, no-load, specified tire pressure, etc.). Refer to <u>DAS-245, "Work Procedure (Preparation)"</u>.

**1.**CHECK REAR VIEW CAMERA HEIGHT

Measure the rear view camera height "H".

>> GO TO 2.



# 2. REAR VIEW CAMERA CALIBRATION

- 1. Select "Work Support" on "AVM" with CONSULT.
- 2. Select "REAR CAMERA ITS".
- 3. Select "OK".
- 4. Input the rear view camera height "H", and then touch "APPLY".
- 5. Confirm that the same value is displayed on the center display.
- 6. Confirm the following items:
- The target should be accurately placed.
- The vehicle should be stopped.
- The vehicle should be under the specified vehicle condition.
- 7. Select "Start" to perform calibration.

#### CAUTION:

- Perform the calibration after the ignition or engine has been kept on for at least 10 minutes to stabilize camera.
- Operate CONSULT outside the vehicle, and close all doors to retain appropriate vehicle altitude.
- 8. Confirm the displayed item.
- "Completed": Select "Completion".
- Otherwise, perform the following services:

## **DAS-104**

#### < BASIC INSPECTION >

	ed item	Possible cause	Service procedure	
	_	Temporary malfunction in internal processing of the rear view camera.	Go back to Step 1	
SUSPENSION	00H Routine not ac- tivated	Rear view camera unit malfunction.	Position the target appro- priately again. Perform	
	10H Writing error	<ul><li>Temporary malfunction in internal processing of the rear view camera.</li><li>Rear view camera malfunction.</li></ul>	the aiming again. Refer to <u>DAS-246, "Work Pro-</u> <u>cedure (Target Setting)"</u> .	
X AIMING NG Y (X: 0 - 7, Y: 1 - 8)	_	<ul> <li>A target is not-yet-placed.</li> <li>(The rear view camera cannot detect a target.)</li> </ul>	Position the target appro- priately again. Perform	
ABNORMALLY COM- PLETED	_	<ul> <li>The position of the rear view camera is not correct.</li> <li>Inappropriate work environment.</li> <li>Inappropriate vehicle condition.</li> </ul>	the aiming again. Refer to <u>DAS-245. "Work Pro-</u> <u>cedure (Preparation)"</u> .	

#### NOTE:

Replace camera unit if "00H Routine not activated" or "10H Writing error" are repeatedly indicated during the above two services are performed.

9. Confirm that "Completed" is displayed and then select "End" to close the calibration procedure.

>> GO TO 3.

# **3.**PERFORM SELF-DIAGNOSIS

Perform self-diagnosis of ITS control unit with CONSULT.

### Is any DTC detected?

- YES >> Perform diagnosis on the detected DTC and repair or replace the applicable item. Refer to DAS-20, "DTC Index". >> GO TO 4. NO
- **4**.ACTION TEST

Test the system operation by action test. Refer to DAS-99, "Description".

>> Work End.

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# **DTC/CIRCUIT DIAGNOSIS** C1A03 VEHICLE SPEED SENSOR

DTC Logic

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
C1A03	VHCL SPEED SEN CIRC	ITS control unit detects that the result of calculation about velocity has error.	<ul> <li>ABS actuator and electric unit (control unit)</li> <li>ITS control unit</li> </ul>

## DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

Turn ignition ON. 1.

- Perform "All DTC Reading" with CONSULT. 2.
- Check if the "C1A03" is detected as the current malfunction in "Self Diagnostic Result" of "AVM". 3.

Is "C1A03" detected as the current malfunction?

>> Refer to <u>DAS-249</u>, "Diagnosis Procedure".
>> Refer to <u>GI-47</u>, "Intermittent Incident". YES

NO

## **Diagnosis** Procedure

INFOID:000000008841800

# 1. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) SELF-DIAGNOSIS RESULTS

Check if any DTC is detected in "Self Diagnostic Result" of "ABS".

Is any DTC detected?

YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. Refer to BRC-44, "DTC Index".

NO >> GO TO 2.

2. CHECK ALL UNIT SELF-DIANOSIS RESULTS

Check if any DTC is detected except for ITS control unit about VDC in "ALL DTC READING" with CONSULT. Is any DTC detected except for ITS?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-123, "Removal and Installation".
- NO >> Replace ITS control unit. Refer to DAS-66, "Removal and Installation - ITS Control Unit".

INFOID:000000008841799

## C1A04 ABS/TCS/VDC SYSTEM

### < DTC/CIRCUIT DIAGNOSIS >

# C1A04 ABS/TCS/VDC SYSTEM

# DTC Logic

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[LDW]

INFOID:000000008841803

	Trouble diagnosis		Dessible serves
DTC	name	DTC detecting condition	Possible causes
C1A04	VDC CIRCUIT	ITS control unit receives the message that means "VDC is failed" from ABS actuator and electric unit (control unit).	<ul> <li>ABS actuator and electric unit (control unit)</li> <li>ITS control unit</li> </ul>
DTC CONFI	RMATION PROCE	DURE	
1.PERFORM	I DTC CONFIRMATI	ON PROCEDURE	
3. Check if t <u>Is "C1A04" de</u> YES >> F	'All DTC Reading" wi	ed as the current malfunction in "Self Di- : malfunction?	agnostic Result" of "AVM".
Diagnosis Procedure			
		ELECTRIC UNIT (CONTROL UNIT) SE	ELF-DIAGNOSIS RESULTS
Is any DTC d YES >> F NO >> C	etected?	elf Diagnostic Result" of "ABS". the detected DTC and repair or replace OSIS RESULTS	the malfunctioning parts. Refer to
		pt for ITS control unit about VDC in "ALI	_ DTC READING" with CONSULT.
Is any DTC d			
		r and electric unit (control unit). Refer to	BRC-123, "Removal and Installa-
	<u>on"</u> . Replace ITS control u	nit. Refer to <u>DAS-66, "Removal and Insta</u>	allation - ITS Control Unit".

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## C1A39 STEERING ANGLE SENSOR

## < DTC/CIRCUIT DIAGNOSIS >

# C1A39 STEERING ANGLE SENSOR

## DTC Logic

INFOID:000000008841807

INFOID:000000008841808

[LDW]

### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
C1A39	STRG SEN CIR	ITS control unit receives the message that means "Steering angle sensor is failed" from steering angle sensor.	<ul><li>Steering angle sensor</li><li>ITS control unit</li></ul>

## DTC CONFIRMATION PROCEDURE

# 1.PERFORM DTC CONFIRMATION PROCEDURE

#### 1. Turn ignition ON.

- 2. Perform "All DTC Reading" with CONSULT.
- 3. Check if the "C1A39" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".

### Is "C1A39" detected as the current malfunction?

- YES >> Refer to DAS-249, "Diagnosis Procedure".
- NO >> Refer to <u>GI-47, "Intermittent Incident"</u>.

## **Diagnosis** Procedure

1. CHECK STRG SENSOR SELF-DIAGNOSIS RESULTS

Check if any DTC is detected in "Self Diagnostic Result" of "ABS".

### Is any DTC detected?

- YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. Refer to <u>BRC-44, "DTC Index"</u>.
- NO >> GO TO 2.

**2.**CHECK ALL UNIT SELF-DIANOSIS RESULTS

Check if any DTC is detected except for ITS control unit about ABS in "ALL DTC READING" with CONSULT. <u>Is any DTC detected except for ITS?</u>

- YES >> Replace steering angle sensor. Refer to <u>BRC-127</u>, "Removal and Installation".
- NO >> Replace ITS control unit. Refer to DAS-66, "Removal and Installation ITS Control Unit".

# **U0122 VDC P-RUN DIAG**

# < DTC/CIRCUIT DIAGNOSIS >

# U0122 VDC P-RUN DIAG

# DTC Logic

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INFOID:000000008841811

<ul> <li>1. PERFORM DTC CONFIRMATION PROCEDURE</li> <li>1. Turn ignition ON.</li> <li>2. Perform "All DTC Reading" with CONSULT.</li> <li>3. Check if the "U0122" is detected as the current malfunction in self-diagnosis results of "AVM".</li> <li>Is "U0122" detected as the current malfunction?</li> <li>YES &gt;&gt; Refer to DAS-252. "Diagnosis Procedure".</li> <li>NO &gt;&gt; Refer to GI-47. "Intermittent Incident".</li> <li>Diagnosis Procedure</li> <li>I. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) SELF-DIAGNOSIS RESULTS</li> <li>Check if any DTC is detected in "Self Diagnostic Result" of "ABS".</li> <li>Is any DTC detected?</li> <li>YES &gt;&gt; Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.</li> <li>NO &gt;&gt; GO TO 2.</li> <li>2. CHECK ITS CONTROL UNIT SELF-DIAGNOSIS RESULTS</li> <li>Check if any DTC is detected in "Self Diagnostic Result" of "ABS".</li> <li>Is any DTC is detected in "Self Diagnostic Result" of "ABS".</li> <li>Is any DTC is detected in "Self Diagnostic Result" of "ABS".</li> <li>Is any DTC is detected in "Self Diagnostic Result" of "ABS".</li> <li>Is any DTC is detected in "Self Diagnostic Result" of "ABS".</li> <li>Is any DTC is detected in "Self Diagnostic Result" of "ABS".</li> <li>Is any DTC is detected in "Self Diagnostic Result" of "ABS".</li> <li>Is any DTC detected?</li> <li>YES &gt;&gt; Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.</li> <li>Is any DTC detected?</li> <li>YES &gt;&gt; Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.</li> </ul>	DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
<ul> <li>2. Perform "All DTC Reading" with CONSULT.</li> <li>3. Check if the "U0122" is detected as the current malfunction in self-diagnosis results of "AVM".</li> <li><u>Is "U0122" detected as the current malfunction?</u></li> <li>YES &gt;&gt; Refer to DAS-252, "Diagnosis Procedure".</li> <li>NO &gt;&gt; Refer to GI-47, "Intermittent Incident".</li> <li>Diagnosis Procedure I.CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) SELF-DIAGNOSIS RESULTS Check if any DTC is detected in "Self Diagnostic Result" of "ABS". Is any DTC detected? YES &gt;&gt; Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. NO &gt;&gt; GO TO 2. 2.CHECK ITS CONTROL UNIT SELF-DIAGNOSIS RESULTS Check if any DTC is detected in "Self Diagnostic Result" of "ABS". Is any DTC detected? YES &gt;&gt; Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. NO &gt;&gt; GO TO 2. 2.CHECK ITS CONTROL UNIT SELF-DIAGNOSIS RESULTS Check if any DTC is detected in "Self Diagnostic Result" of "ABS". Is any DTC detected? YES &gt;&gt; Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. NO &gt;&gt; So Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. NO &gt;&gt; Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. NO &gt;&gt; Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. NO &gt;&gt; Replace the ABS actuator and electric unit (control unit). Refer to BRC-123, "Removal and Instal-</li></ul>	U012	2 VDC P-RUN DIAG	about P-RUN from VDC via V-CAN communi-	
<ol> <li>Turn ignition ON.</li> <li>Perform "All DTC Reading" with CONSULT.</li> <li>Check if the "U0122" is detected as the current malfunction in self-diagnosis results of "AVM".</li> <li><u>Is "U0122" detected as the current malfunction?</u></li> <li>YES &gt;&gt; Refer to <u>DAS-252</u>, "Diagnosis Procedure". NO &gt;&gt; Refer to <u>GI-47</u>, "Intermittent Incident".</li> <li>Diagnosis Procedure</li> <li>CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) SELF-DIAGNOSIS RESULTS</li> <li>Check if any DTC is detected in "Self Diagnostic Result" of "ABS".</li> <li><u>Is any DTC detected?</u></li> <li>YES &gt;&gt; Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. NO &gt;&gt; GO TO 2.</li> <li>CHECK ITS CONTROL UNIT SELF-DIAGNOSIS RESULTS</li> <li>Check if any DTC is detected in "Self Diagnostic Result" of "ABS".</li> <li><u>Is any DTC detected?</u></li> <li>YES &gt;&gt; Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. NO &gt;&gt; GO TO 2.</li> <li>CHECK ITS CONTROL UNIT SELF-DIAGNOSIS RESULTS</li> <li>Check if any DTC is detected in "Self Diagnostic Result" of "ABS".</li> <li><u>Is any DTC detected?</u></li> <li>YES &gt;&gt; Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. NO &gt;&gt; SO TO 2.</li> <li>CHECK ITS CONTROL UNIT SELF-DIAGNOSIS RESULTS</li> <li>Check if any DTC is detected in "Self Diagnostic Result" of "ABS".</li> <li><u>Is any DTC detected?</u></li> <li>YES &gt;&gt; Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. NO &gt;&gt; Replace the ABS actuator and electric unit (control unit). Refer to <u>BRC-123</u>, "Removal and Instal-</li> </ol>	DTC CO	NFIRMATION PROCED	URE	
<ul> <li>2. Perform "All DTC Reading" with CONSULT.</li> <li>3. Check if the "U0122" is detected as the current malfunction in self-diagnosis results of "AVM".</li> <li>Is "U0122" detected as the current malfunction? YES &gt;&gt; Refer to DAS-252, "Diagnosis Procedure". NO &gt;&gt; Refer to GI-47, "Intermittent Incident".</li> <li>Diagnosis Procedure I.CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) SELF-DIAGNOSIS RESULTS Check if any DTC is detected in "Self Diagnostic Result" of "ABS". Is any DTC detected? YES &gt;&gt; Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. NO &gt;&gt; GO TO 2. 2.CHECK ITS CONTROL UNIT SELF-DIAGNOSIS RESULTS Check if any DTC is detected in "Self Diagnostic Result" of "ABS". Is any DTC detected? YES &gt;&gt; Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. NO &gt;&gt; GO TO 2. 2.CHECK ITS CONTROL UNIT SELF-DIAGNOSIS RESULTS Check if any DTC is detected in "Self Diagnostic Result" of "ABS". Is any DTC detected? YES &gt;&gt; Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. NO &gt;&gt; Second the detected DTC and repair or replace the malfunctioning parts. NO &gt;&gt; Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. NO &gt;&gt; Replace the ABS actuator and electric unit (control unit). Refer to BRC-123, "Removal and Instal-</li></ul>	1.PERFO	ORM DTC CONFIRMATIO	N PROCEDURE	
Is "U0122" detected as the current malfunction? YES >> Refer to DAS-252. "Diagnosis Procedure". NO >> Refer to GI-47, "Intermittent Incident". Diagnosis Procedure 1.CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) SELF-DIAGNOSIS RESULTS Check if any DTC is detected in "Self Diagnostic Result" of "ABS". Is any DTC detected? YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. NO >> GO TO 2. 2.CHECK ITS CONTROL UNIT SELF-DIAGNOSIS RESULTS Check if any DTC is detected in "Self Diagnostic Result" of "ABS". Is any DTC detected? YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. NO >> GO TO 2. 2.CHECK ITS CONTROL UNIT SELF-DIAGNOSIS RESULTS Check if any DTC is detected in "Self Diagnostic Result" of "ABS". Is any DTC detected? YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. NO >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-123. "Removal and Instal-	2. Perfo	rm "All DTC Reading" with	CONSULT.	
YES       >> Refer to DAS-252, "Diagnosis Procedure".         NO       >> Refer to GI-47, "Intermittent Incident".         Diagnosis Procedure       Information in the incident of the information in the info			-	nosis results of "AVM".
Diagnosis Procedure       Information         1.CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) SELF-DIAGNOSIS RESULTS         Check if any DTC is detected in "Self Diagnostic Result" of "ABS".         Is any DTC detected?         YES       >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.         NO       >> GO TO 2.         2.CHECK ITS CONTROL UNIT SELF-DIAGNOSIS RESULTS         Check if any DTC is detected in "Self Diagnostic Result" of "ABS".         Is any DTC detected?         YES       >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.         NO       >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-123. "Removal and Instal-				
1.CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) SELF-DIAGNOSIS RESULTS         Check if any DTC is detected in "Self Diagnostic Result" of "ABS".         Is any DTC detected?         YES       >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.         NO       >> GO TO 2.         2.CHECK ITS CONTROL UNIT SELF-DIAGNOSIS RESULTS         Check if any DTC is detected in "Self Diagnostic Result" of "ABS".         Is any DTC detected?         YES         Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.         NO       >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.         NO       >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.         NO       >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-123. "Removal and Instal-				
Check if any DTC is detected in "Self Diagnostic Result" of "ABS".         Is any DTC detected?         YES       >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.         NO       >> GO TO 2.         2.CHECK ITS CONTROL UNIT SELF-DIAGNOSIS RESULTS         Check if any DTC is detected in "Self Diagnostic Result" of "ABS".         Is any DTC detected?         YES       >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.         NO       >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-123. "Removal and Instal-	Diagnos	sis Procedure		INFOID:00000008841812
Is any DTC detected?         YES       >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.         NO       >> GO TO 2.         2.CHECK ITS CONTROL UNIT SELF-DIAGNOSIS RESULTS         Check if any DTC is detected in "Self Diagnostic Result" of "ABS".         Is any DTC detected?         YES       >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.         NO       >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-123, "Removal and Instal-	<b>1.</b> CHEC	K ABS ACTUATOR AND E	LECTRIC UNIT (CONTROL UNIT) SE	LF-DIAGNOSIS RESULTS
YES       >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.         NO       >> GO TO 2.         2.CHECK ITS CONTROL UNIT SELF-DIAGNOSIS RESULTS         Check if any DTC is detected in "Self Diagnostic Result" of "ABS".         Is any DTC detected?         YES       >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.         NO       >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-123, "Removal and Instal-	Check if a	iny DTC is detected in "Sel	f Diagnostic Result" of "ABS".	
NO       >> GO TO 2.         2.CHECK ITS CONTROL UNIT SELF-DIAGNOSIS RESULTS         Check if any DTC is detected in "Self Diagnostic Result" of "ABS".         Is any DTC detected?         YES       >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.         NO       >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-123, "Removal and Instal-				
<ul> <li>2.CHECK ITS CONTROL UNIT SELF-DIAGNOSIS RESULTS</li> <li>Check if any DTC is detected in "Self Diagnostic Result" of "ABS".</li> <li>Is any DTC detected?</li> <li>YES &gt;&gt; Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.</li> <li>NO &gt;&gt; Replace the ABS actuator and electric unit (control unit). Refer to <u>BRC-123</u>, "Removal and Instal-</li> </ul>			e detected DTC and repair or replace the	ne malfunctioning parts.
Check if any DTC is detected in "Self Diagnostic Result" of "ABS".         Is any DTC detected?         YES       >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.         NO       >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-123, "Removal and Instal-	<b>^</b>		LF-DIAGNOSIS RESULTS	
Is any DTC detected?         YES       >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.         NO       >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-123, "Removal and Instal-	-			
NO >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-123, "Removal and Instal-	<u>ls any DT</u>	<u>C detected?</u>	-	
		Replace the ABS actuat		
		lation".		

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#### **U0416 VDC CHECKSUM DIAG**

#### < DTC/CIRCUIT DIAGNOSIS >

# U0416 VDC CHECKSUM DIAG

#### DTC Logic

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[LDW]

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U0416	VDC CHECKSUM DIAG	ITS control unit receives the incorrect signal about P-RUN from VDC via V-CAN communi- cation	ABS actuator and electric unit (control unit)

#### DTC CONFIRMATION PROCEDURE

# 1.PERFORM DTC CONFIRMATION PROCEDURE

#### 1. Turn ignition ON.

- 2. Perform "All DTC Reading" with CONSULT.
- 3. Check if the "U0416" is detected as the current malfunction in self-diagnosis results of "AVM".

#### Is "U0416" detected as the current malfunction?

- YES >> Refer to DAS-252, "Diagnosis Procedure".
- NO >> Refer to <u>GI-47, "Intermittent Incident"</u>.

#### **Diagnosis** Procedure

INFOID:000000008841816

# 1. CHECK VDC UNIT SELF-DIAGNOSIS RESULTS

Check if any DTC is detected in "Self Diagnostic Result" of "ABS".

#### Is any DTC detected?

YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.

NO >> GO TO 2.

# 2. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) SELF-DIAGNOSIS RESULTS

Check if any DTC is detected in "Self Diagnostic Result" of "ABS".

#### Is any DTC detected?

- YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.
- NO >> Replace the ABS actuator and electric unit (control unit). Refer to <u>BRC-123</u>, "<u>Removal and Instal-</u> lation".

#### **U0428 STEERING ANGLE SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

# **U0428 STEERING ANGLE SENSOR**

# DTC Logic

DTC	Display contents of CONSULT	DTC detection condition	Possible malfunction factor
U0428	ST ANGLE SENSOR CALIBRATION [U0428]	The neutral position adjustment of the steering angle sensor is incomplete.	Adjust neutral position of the steering angle sensor.
Diagn	osis Procedure		INFOID:00000008841819
1.adju	JST THE NEUTRAL F	POSITION OF THE STEERING ANGLE SENSO	R
When U	11232 is detected, adju	ust the neutral position of the steering angle sen	sor.
	>> Perform adjustme SULT Function (A	ent of the neutral position of the steering angle s	sensor. Refer to <u>BRC-33, "CON-</u>
	SOLT FUNCTION (F	<u>403/</u> .	

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#### < DTC/CIRCUIT DIAGNOSIS >

#### U1000 CAN COMM CIRCUIT

#### Description

#### CAN COMMUNICATION

CAN (Controller Area Network) is a serial communication line for real time applications. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Modern vehicle is equipped with many electronic control units, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN-H, CAN-L) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads the required data only. CAN communication signal chart. Refer to <u>LAN-32</u>, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart".

#### 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.

#### DTC Logic

INFOID:000000008841821

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U1000	CAN COMM CIRCUIT	If ITS control unit is not transmitting or receiving CAN communication signal or ITS communica- tion signal for 2 seconds or more	<ul><li>CAN communication system</li><li>ITS communication system</li></ul>

#### NOTE:

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If "U1000" is detected, first diagnose the CAN communication system.

#### **Diagnosis** Procedure

INFOID:000000008841822

# **1.**PERFORM THE SELF-DIAGNOSIS

- 1. Turn the ignition switch ON.
- 2. Turn the MAIN switch of ITS system ON, and then wait for 30 seconds or more.
- 3. Perform "All DTC Reading" with CONSULT.
- 4. Check if the "U1000" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".

#### Is "U1000" detected as the current malfunction?

- YES >> Refer to <u>DAS-46</u>, "Description".
- NO >> Refer to <u>GI-47, "Intermittent Incident"</u>.

INFOID:00000008841820

#### U1010 CONTROL UNIT (CAN)

#### < DTC/CIRCUIT DIAGNOSIS >

# U1010 CONTROL UNIT (CAN)

# Description

CAN controller controls the communication of CAN communication signal and ITS communication signal, and the error detection.

#### DTC Logic

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes	D
U1010	CONTROL UNIT (CAN)	If ITS control unit detects malfunction by CAN controller initial diagnosis	ITS control unit	
				E

#### **Diagnosis** Procedure

# 1.PERFORM DTC CONFIRMATION PROCEDURE

1. Turn the MAIN switch of ITS system ON.

2. Perform "All DTC Reading" with CONSULT.

3. Check if the "U1010" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".

#### Is "U1010" detected as the current malfunction?

YES >> Replace the ITS control unit. Refer to <u>DAS-66, "Removal and Installation - ITS Control Unit"</u>.

NO >> Inspection End.

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# **U111A REAR CAMERA IMAGE SIGNAL CIRCUIT**

< DTC/CIRCUIT DIAGNOSIS >

# U111A REAR CAMERA IMAGE SIGNAL CIRCUIT

#### DTC Logic

INFOID:000000008841827

[LDW]

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U111A	REAR CAMERA IM- AGE SIGNAL	Rear camera image signal circuit is open or shorted	Check rear camera image signal circuit between rear camera and around view monitor control unit.

#### **Diagnosis** Procedure

INFOID:000000008841828

Regarding Wiring Diagram information, refer to <u>DAS-22, "Wiring Diagram"</u>.

# 1. CHECK CONTINUITY REAR CAMERA POWER SUPPLY AND GROUND CIRCUIT

- 1. Turn the ignition switch OFF.
- 2. Disconnect the ITS control unit connector and rear camera connector.
- 3. Check for continuity between ITS control unit harness connector and rear camera harness connector.

ITS cor	ntrol unit	Rear Camera		Continuity
Connector	Terminal	Connector	Terminal	Continuity
M59	51	B35	7	Yes
	52	555	8	163

4. Check for continuity between ITS control unit harness connector and ground.

ntrol unit		Continuity
Connector Terminal		Continuity
52		No
	Terminal	Terminal Ground

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the harness or connector.

# 2. CHECK VOLTAGE REAR CAMERA POWER SUPPLY

1. Connect the ITS control unit connector and rear camera connector.

2. Turn the ignition switch ON.

3. Check voltage between ITS control unit harness connector and ground.

	Terminal			
(	(+) ITS control unit		Condition	Voltage (Approx.)
ITS cor			(–)	
Connector	Terminal			
M59	52	Ground	"CAMERA" switch is ON or shift selector is in R (Reverse)	6.2 V

#### Is inspection result normal?

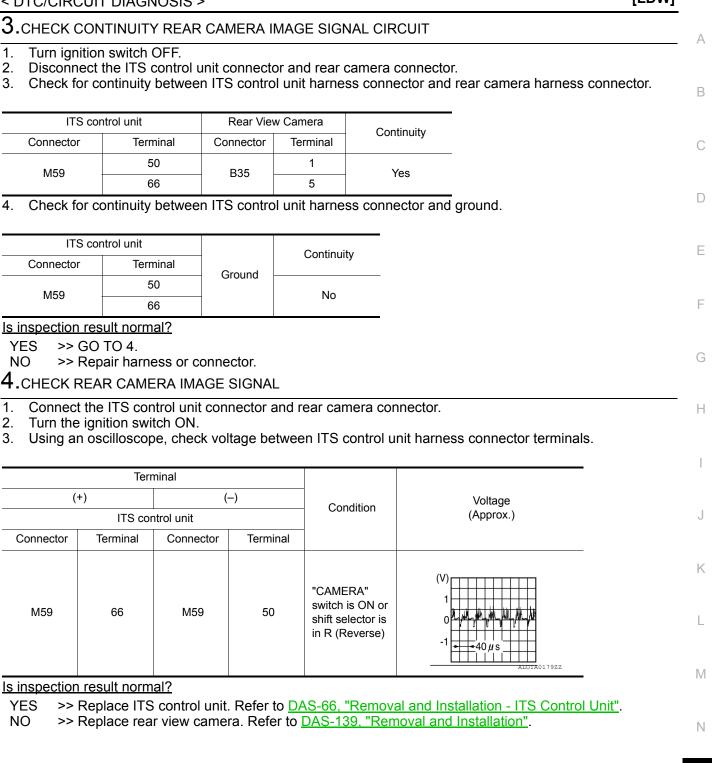
YES >> GO TO 3.

NO >> Replace ITS control unit. Refer to DAS-66, "Removal and Installation - ITS Control Unit".

# **U111A REAR CAMERA IMAGE SIGNAL CIRCUIT**

#### < DTC/CIRCUIT DIAGNOSIS >

[LDW]



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#### **U1232 STEERING ANGLE SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

# U1232 STEERING ANGLE SENSOR

### **DTC Logic**

INFOID:000000008841830

[LDW]

DTC	Display contents of CONSULT	DTC detection condition	Possible malfunction factor
U1232	ST ANGLE SEN CALIB	The neutral position registration of the steering angle sensor cannot finish.	<ul><li>Steering angle sensor</li><li>ITS control unit</li></ul>

#### **Diagnosis** Procedure

INFOID:000000008841831

**1**. REGISTER THE NEUTRAL POSITION OF THE STEERING ANGLE SENSOR

- 1. Turn the ignition switch ON.
- Perform registration of the neutral position of the steering angle sensor. Refer to <u>DAS-224</u>, "CONSULT <u>Function (AVM)</u>".
- 3. Check "Self Diagnostic Result" of "AVM" with CONSULT. Refer to <u>DAS-224, "CONSULT Function (AVM)"</u>. Is "ST ANGLE SEN CALIB" detected?

YES >> GO TO 2.

NO >> Inspection End.

2. CHECK STEERING ANGLE SENSOR

Check steering angle sensor.

Is the inspection result normal?

- YES >> Replace ITS control unit. Refer to DAS-66, "Removal and Installation ITS Control Unit".
- NO >> Repair or replace malfunctioning parts.

Revision: August 2012

#### **U1305 CAMERA IMAGE CALIB**

#### < DTC/CIRCUIT DIAGNOSIS >

# U1305 CAMERA IMAGE CALIB

# DTC Logic

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INFOID:000000008841832

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U1305	CAMERA CONFIG	ITS control unit configuration is incomplete	Perform ITS configuration with CONSULT
Diagnosis	Procedure		INFOID:00000008841833
.снеск	SELF-DIAGNOSIS RES	ULTS	
Check if "U1	305" is current in "Self [	Diagnostic Result" of "AVM".	
<u>s "U1305" d</u>	etected?	-	
			224, "CONSULT Function (AVM)". If
	problem persists, repair Refer to <u>GI-47, "Intermit</u>	or replace the malfunctioning part.	

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#### **U1308 CAMERA CONFIG**

#### < DTC/CIRCUIT DIAGNOSIS >

# U1308 CAMERA CONFIG

#### DTC Logic

INFOID:000000008841834

[LDW]

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U1308	ITS CALIB [U1308]	ITS control unit calibration is incomplete	Perform ITS calibration with CONSULT

#### **Diagnosis** Procedure

INFOID:000000008841835

# 1. CHECK SELF-DIAGNOSIS RESULTS

Check if "U1308" is current in "Self Diagnostic Result" of "AVM".

#### Is "U1308" detected?

- YES >> Perform ITS calibration of camera image using CONSULT. Refer to <u>DAS-224</u>, "<u>CONSULT Func-</u> <u>tion (AVM)</u>".
- NO >> Refer to <u>GI-47, "Intermittent Incident"</u>.

#### **U1309 PUMP UNIT CURRENT**

#### < DTC/CIRCUIT DIAGNOSIS >

DTC DETECTION LOGIC

# U1309 PUMP UNIT CURRENT

# DTC Logic

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INFOID:000000008841838

[LDW]

DTC	Trouble dia	agnosis name	DTC d	etecting condition	Possible causes
U1309	PUMP UNI	T CURRENT	ITS control unit de from pump contro	etects the value of current I unit is incorrect	<ul> <li>Rear view camera washer control unit</li> <li>Harness</li> <li>ITS control unit</li> </ul>
TC CONF	IRMATION	PROCED	URE		
.PERFOR	M DTC CON	NFIRMATIO	N PROCEDUR	E	
. Turn igni	ition switch	ON.			
. Perform	"All DTC Re	eading" with	CONSULT.		
				malfunction in "Self Dia	agnostic Result" of "AVM".
	etected as the set of		anunction? anosis Procedu	re"	
	Inspection E			<u>.</u> .	
Diagnosis	Procedu	re			INFC/D:00000008841835
0					
) e e e e e l 4		inferme (			
kegarding W	ning Diagra	un informati	on, refer to DAS	S-22, "Wiring Diagram"	
.CHECK F	REAR VIEW	CAMERA A	IR PUMP MOT	OR POWER SUPPLY	CIRCUIT
			a washer contro	ol unit connector.	
	ignition swi		w camera wash	er control unit connect	or and ground.
			w camera wash	er control unit connect	or and ground.
			w camera wash	er control unit connect	or and ground.
	oltage betwe		-		or and ground.
3. Check vo (+ Rear view ca	Oltage betwee Terminal		w camera wash	Voltage (Approx.)	or and ground.
3. Check ve (+ Rear view ca contro	Oltage betwe Terminal +) mera washer ol unit	een rear vie	-	Voltage	or and ground.
3. Check vertex (+ Rear view ca contro Connector	Oltage betwee Terminal +) mera washer ol unit Terminal	een rear vie	Condition	Voltage (Approx.)	or and ground.
8. Check vertex (+ Rear view ca contro Connector B16	Oltage betwee Terminal +) mera washer ol unit Terminal 12	een rear vie (–) Ground	-	Voltage	or and ground.
8. Check vertex (+ Rear view ca controc Connector B16 s inspection	Oltage betwee Terminal +) mera washer ol unit Terminal	een rear vie (–) Ground	Condition	Voltage (Approx.)	or and ground.
<ul> <li>Check version</li> <li>(+</li> <li>Rear view can control</li> <li>Connector</li> <li>B16</li> <li>Sinspection</li> <li>YES &gt;&gt; 0</li> <li>NO &gt;&gt; 1</li> </ul>	oltage between Terminal +) mera washer ol unit Terminal 12 result norm GO TO 2. Repair the h	een rear vie (–) Ground <u>al?</u> arness or co	Condition Ignition ON	Voltage (Approx.) 12 V	
Rear view ca contro Connector B16 Sinspection YES >> 0 NO >> 1	oltage between Terminal +) mera washer ol unit Terminal 12 result norm GO TO 2. Repair the h	een rear vie (–) Ground <u>al?</u> arness or co	Condition Ignition ON	Voltage (Approx.)	
Connector B16 Sinspection YES >> C NO >> P CHECK F Turn the	oltage between Terminal (+) mera washer ol unit Terminal 12 result norm GO TO 2. Repair the h REAR VIEW ignition swir	(–) Ground al? arness or co CAMERA A tch OFF.	Condition Ignition ON Onnector.	Voltage (Approx.) 12 V	T
Connector B16 Sinspection YES >> C NO >> P CHECK F Turn the	oltage between Terminal (+) mera washer ol unit Terminal 12 result norm GO TO 2. Repair the h REAR VIEW ignition swir	(–) Ground al? arness or co CAMERA A tch OFF.	Condition Ignition ON Onnector.	Voltage (Approx.) 12 V	T
<ul> <li>Check version</li> <li>(+</li> <li>Rear view can control</li> <li>Connector</li> <li>B16</li> <li>sinspection</li> <li>YES &gt;&gt; 0</li> <li>NO &gt;&gt; 1</li> <li>CHECK Fersion</li> <li>Turn the</li> <li>Check for</li> </ul>	Terminal Terminal Terminal Terminal 12 Terminal 12 Tesult norm GO TO 2. Repair the h REAR VIEW ignition swip or continuity	(–) Ground al? CAMERA A tch OFF. between re	Condition Ignition ON Onnector.	Voltage (Approx.) 12 V	T
Check version     (+         Rear view ca         contro     Connector     B16     Sinspection     YES >> 0     NO >> I     CHECK F     Check for     Rear view can	Terminal Terminal Terminal Terminal 12 Tesult norm GO TO 2. Repair the h REAR VIEW ignition swir or continuity	(–) Ground <u>al?</u> arness or co CAMERA A tch OFF. between re-	Condition Ignition ON Onnector. AIR PUMP MOT ar view camera	Voltage (Approx.) 12 V	T
<ul> <li>Check version</li> <li>(+</li> <li>Rear view can control</li> <li>Connector</li> <li>B16</li> <li>sinspection</li> <li>YES &gt;&gt; 0</li> <li>NO &gt;&gt; F</li> <li>CHECK F</li> <li>Turn the</li> <li>Check for</li> <li>Rear view can Connector</li> </ul>	Terminal Terminal Terminal Terminal 12 Terminal 12 Tesult norm GO TO 2. Repair the h REAR VIEW ignition swip pr continuity mera washer continuity	(–) Ground al? arness or co CAMERA A tch OFF. between re- ontrol unit ninal	Condition Ignition ON Dnnector. AIR PUMP MOT ar view camera Ground	Voltage (Approx.) 12 V TOR GROUND CIRCUI washer control unit co	T
<ul> <li>Check version</li> <li>(+</li> <li>Rear view can control</li> <li>Connector</li> <li>B16</li> <li>Sinspection</li> <li>YES &gt;&gt; 0</li> <li>NO &gt;&gt; F</li> <li>CHECK F</li> <li>Turn the</li> <li>Check for</li> <li>Rear view can connector</li> <li>B16</li> </ul>	Terminal Terminal Terminal Terminal 12 Tesult norm GO TO 2. Repair the h REAR VIEW ignition swi or continuity mera washer continuity	(-) Ground al? arness or co CAMERA A tch OFF. between re- ontrol unit ninal 5	Condition Ignition ON Dnnector. AIR PUMP MOT ar view camera Ground	Voltage (Approx.) 12 V OR GROUND CIRCUI washer control unit co	T
<ul> <li>Check version</li> <li>(+</li> <li>Rear view can control</li> <li>Connector</li> <li>B16</li> <li>Sinspection</li> <li>YES &gt;&gt; 0</li> <li>NO &gt;&gt; F</li> <li>CHECK F</li> <li>Turn the</li> <li>Check for</li> <li>Rear view can Connector</li> <li>B16</li> <li>S the inspection</li> </ul>	Terminal Terminal Terminal Terminal 12 Terminal 12 Tesult norm GO TO 2. Repair the h REAR VIEW ignition swip or continuity mera washer continuity mera washer continuity	(-) Ground al? arness or co CAMERA A tch OFF. between re- ontrol unit ninal 5	Condition Ignition ON Dnnector. AIR PUMP MOT ar view camera Ground	Voltage (Approx.) 12 V TOR GROUND CIRCUI washer control unit co	T
<ul> <li>Check version</li> <li>(+</li> <li>Rear view can control</li> <li>Connector</li> <li>B16</li> <li>sinspection</li> <li>YES &gt;&gt; 0</li> <li>NO &gt;&gt; F</li> <li>CHECK F</li> <li>Turn the</li> <li>Check for</li> <li>Rear view can Connector</li> <li>B16</li> <li>s the inspec</li> <li>YES &gt;&gt; 0</li> </ul>	Terminal Terminal Terminal Terminal 12 Tesult norm GO TO 2. Repair the h REAR VIEW ignition swi or continuity mera washer continuity	(–) Ground al? arness or co CAMERA A tch OFF. between re- ontrol unit ninal ormal?	Condition Ignition ON Dnnector. AIR PUMP MOT ar view camera Ground Co	Voltage (Approx.) 12 V TOR GROUND CIRCUI washer control unit co	T

1. Disconnect the ITS control unit connector.

#### DAS-119

# **U1309 PUMP UNIT CURRENT**

#### < DTC/CIRCUIT DIAGNOSIS >

2. Check for continuity between ITS control unit harness connector and rear view camera washer control unit connector.

ITS cor	ntrol unit	Rear view ca control unit	mera washer	Continuity
Connector	Terminal	Connector	Terminal	
M58	2	B16	7	Yes
00101	3	010	8	165

3. Check for continuity between ITS control unit harness connector and ground.

ITS cor	ntrol unit		Continuity
Connector	Terminal	Ground	Continuity
M58	2	Ground	No
MISO	3		NO

Is inspection result normal?

YES >> GO TO 4.

NO >> Repair the harness or connector.

#### **4.**CHECK CONTINUITY REAR VIEW CAMERA WASHER CONTROL UNIT TO PUMP

1. Disconnect rear view camera air pump connector.

2. Check for continuity between rear view camera washer control unit connector and pump connector.

Rear view camera	washer control unit	Rear view ca pump motor	mera air	Continuity
Connector	Terminal	Connector	Terminal	
B16	1	B17	1	Yes
	2		2	163

3. Check for continuity between rear view camera washer control unit connector and ground.

Rear view camera	washer control unit		Continuity
Connector	Terminal	Ground	Continuity
B16	1	Ground	No
вю	2		NO

Is inspection result normal?

YES >> GO TO 5.

NO >> Repair the harness or connector.

**5.**CHECK REAR VIEW CAMERA AIR PUMP MOTOR ITS CONTROL UNIT SUPPLY CIRCUIT

Momentarily connect a jumper from a fused battery positive to terminal 1 and from ground to terminal 2 of the rear view camera air pump motor.

Does the pump operate?

YES >> GO TO 6.

NO >> Replace the rear view camera air pump motor.

 ${f 6}.$ CHECK REAR VIEW CAMERA AIR PUMP MOTOR ITS CONTROL UNIT SUPPLY CIRCUIT

- 1. Reconnect the ITS control unit connector.
- 2. Turn the ignition switch ON.
- 3. Using CONSULT, activate the rear view camera air pump while checking voltage between rear view camera washer control unit connector and ground.

#### **U1309 PUMP UNIT CURRENT**

#### < DTC/CIRCUIT DIAGNOSIS >

	Terminal			
(	+)			Voltage
	amera washer ol unit	(-)	Condition	(Approx.)
Connector	Terminals			
B16	7, 8	Ground	Activating pump	5 V

Can voltage be measured on either terminal?

YES >> Replace rear view camera washer control unit.

NO >> Replace the ITS control unit. Refer to DAS-66, "Removal and Installation - ITS Control Unit".

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#### U130B REAR CAMERA COMM ERROR

#### < DTC/CIRCUIT DIAGNOSIS >

# U130B REAR CAMERA COMM ERROR

#### DTC Logic

INFOID:000000008841842

[LDW]

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U130B	REAR CAMERA COMM ERROR	ITS control unit receives the incorrect commu- nication signal from rear view camera.	<ul><li>Rear view camera</li><li>Harness</li><li>ITS control unit</li></ul>

#### DTC CONFIRMATION PROCEDURE

# 1.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- 2. Perform "All DTC Reading" with CONSULT.
- 3. Check if the "U130B" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".
- Is "U130B" detected as the current malfunction?
- YES >> Refer to DAS-266, "Diagnosis Procedure".
- NO >> Inspection End.

#### **Diagnosis** Procedure

INFOID:000000008841843

Regarding Wiring Diagram information, refer to DAS-22, "Wiring Diagram".

# 1.CONNECTOR CHECK

Check the ITS control unit and rear view camera connectors for the following:

- Proper connection
- Damage
- Disconnected or loose terminals

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

# 2. CHECK REAR VIEW CAMERA VOLTAGE

- 1. Connect ITS control unit and rear view camera harness connectors.
- 2. Check voltage between ITS control unit connector M59 and ground.

	Terminal			
(*	(+)			Voltage
ITS cor	ntrol unit	()		(Approx.)
Connector	Terminal			
M59	68	Ground	Ignition ON	5 V

Is the inspection result normal?

YES >> Replace the ITS control unit. Refer to DAS-66, "Removal and Installation - ITS Control Unit".

NO >> Replace rear view camera. Refer to DAS-139. "Removal and Installation".

#### **U1310 PUMP UNIT CIRCUIT**

#### < DTC/CIRCUIT DIAGNOSIS >

DTC DETECTION LOGIC

# U1310 PUMP UNIT CIRCUIT

# DTC Logic

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INFOID:000000008841848

[LDW]

	<u> </u>	gnosis name	LL	OTC detecting condition	Possible causes
U1310		T CIRCUIT		unit detects the value of voltage control unit is incorrect	<ul> <li>Rear view camera washer control unit</li> <li>Harness</li> <li>ITS control unit</li> </ul>
DTC CONFIF	RMATION	PROCE	URE		
PERFORM				DURE	
I. Turn ignitio	on switch C	ON.			
			h CONSULT	: rent malfunction in "Self Dia	apostic Desult" of "AV/M"
s "U1310" det					
YES >> Re	efer to DAS	<u>S-266, "Dia</u>	agnosis Proc		
	spection E				
Diagnosis F	Procedur	e			INFOID:00000008841849
Regarding Wir	ring Diagra	m informa	tion, refer to	DAS-22, "Wiring Diagram".	
<b>1</b> .CHECK RE	AR VIEW	CAMERA	AIR PUMP	MOTOR POWER SUPPLY	CIRCUIT
				MOTOR POWER SUPPLY ontrol unit connector.	CIRCUIT
I. Disconneo 2. Turn the ig	ct the rear v gnition swit	view came ch ON.	ra washer c	ontrol unit connector.	
Disconnec 2. Turn the ig	ct the rear v gnition swit	view came ch ON.	ra washer c		
I. Disconneo 2. Turn the ig	ct the rear v gnition swit	view came ch ON.	ra washer c	ontrol unit connector.	
1. Disconnec 2. Turn the ig	ct the rear v gnition swit tage betwe	view came ch ON.	ra washer c ew camera v	ontrol unit connector. washer control unit connector	
Disconnec     Turn the ig     Check vol     (+)     Rear view came	ct the rear v gnition swit tage betwe Terminal era washer	view came ch ON.	ra washer c	ontrol unit connector. washer control unit connector	
<ol> <li>Disconnec</li> <li>Turn the ig</li> <li>Check volt</li> <li>(+)</li> </ol>	ct the rear v gnition swit tage betwe Terminal era washer	view came cch ON. een rear vie	ra washer c ew camera v	ontrol unit connector. washer control unit connector	
1. Disconnec 2. Turn the ig 3. Check volt (+) Rear view came control u	ct the rear v gnition swit tage betwe Terminal era washer unit	view came cch ON. een rear vie	ra washer c ew camera v	ontrol unit connector. washer control unit connector	
1. Disconnec 2. Turn the ig 3. Check volt (+) Rear view came control u Connector B16	ct the rear v gnition swit tage betwe Terminal era washer unit Terminal 12	view came cch ON. een rear vie (-) Ground	ra washer c ew camera v Conditic	ontrol unit connector. washer control unit connector	
1. Disconnec 2. Turn the ig 3. Check volt (+) Rear view came control to Connector B16 s inspection re YES >> G0	t the rear v gnition swit tage betwe Terminal era washer unit Terminal 12 esult norma O TO 2.	view came ch ON. een rear vie (-) Ground <u>al?</u>	ra washer c ew camera v Conditio	ontrol unit connector. washer control unit connector	
1. Disconnec 2. Turn the ig 3. Check volt (+) Rear view came control u Connector B16 s inspection re YES >> Ge NO >> Re	tt the rear v gnition swit tage betwe Terminal era washer unit Terminal 12 esult norma O TO 2. epair the ha	view came ch ON. een rear vie (-) Ground al? arness or d	ra washer c ew camera v Condition Ignition C	ontrol unit connector. washer control unit connecter on Voltage (Approx.)	or and ground.
1. Disconnec 2. Turn the ig 3. Check volt (+) Rear view came control u Connector B16 s inspection re YES >> G0 NO >> Re 2.CHECK RE	ct the rear v gnition swit tage betwe Terminal era washer unit Terminal 12 esult norma O TO 2. epair the ha EAR VIEW	view came ch ON. een rear vie (-) Ground al? arness or o CAMERA	ra washer c ew camera v Condition Ignition C	ontrol unit connector. washer control unit connector	or and ground.
1. Disconnec 2. Turn the ig 3. Check volt (+) Rear view came control u Connector B16 s inspection re YES >> G0 NO >> Re 2.CHECK RE 1. Turn the ig	ct the rear v gnition swit tage betwe Terminal era washer unit Terminal 12 esult norma O TO 2. epair the ha EAR VIEW gnition swit	view came ch ON. een rear vie (-) Ground al? arness or o CAMERA cch OFF.	connector.	ontrol unit connector.         washer control unit connector.         on       Voltage (Approx.)         DN       Battery voltage         MOTOR GROUND CIRCUI	or and ground.
Disconnec     Turn the ig     Turn the ig     Check volt     (+)     Rear view came     control u     Connector     B16     sinspection re     YES >> Ge     NO >> Re     CHECK RE     Turn the ig	ct the rear v gnition swit tage betwe Terminal era washer unit Terminal 12 esult norma O TO 2. epair the ha EAR VIEW gnition swit	view came ch ON. een rear vie (-) Ground al? arness or o CAMERA cch OFF.	connector.	ontrol unit connector. washer control unit connecter on Voltage (Approx.)	or and ground.
I. Disconnec 2. Turn the ig 3. Check volt (+) Rear view came control u Connector B16 s inspection re YES >> G0 NO >> Re 2.CHECK RE I. Turn the ig	ct the rear v gnition swit tage betwe Terminal era washer unit Terminal 12 esult norma O TO 2. epair the ha EAR VIEW gnition swit continuity l	view came cch ON. een rear vie (-) Ground al? arness or o CAMERA cch OFF. between re	connector.	ontrol unit connector.         washer control unit connector.         MOTOR GROUND CIRCUI         nera washer control unit con	or and ground.
I. Disconnec 2. Turn the ig 3. Check volt (+) Rear view came control u Connector B16 S inspection re YES >> GR NO >> Re 2.CHECK RE I. Turn the ig 2. Check for	ct the rear v gnition swit tage betwe Terminal era washer unit Terminal 12 esult norma O TO 2. epair the ha EAR VIEW gnition swit continuity l	view came cch ON. een rear vie (-) Ground al? arness or o CAMERA cch OFF. between re	connector.	ontrol unit connector.         washer control unit connector.         on       Voltage (Approx.)         DN       Battery voltage         MOTOR GROUND CIRCUI	or and ground.

 $\mathbf{3}$ . Check continuity its control unit to rear view camera washer control unit

1. Disconnect the ITS control unit connector.

#### **DAS-123**

# **U1310 PUMP UNIT CIRCUIT**

#### < DTC/CIRCUIT DIAGNOSIS >

2. Check for continuity between ITS control unit harness connector and rear view camera washer control unit connector.

ITS cor	ntrol unit	Rear view ca control unit	mera washer	Continuity
Connector	Terminal	Connector	Terminal	
M58	2	B16	7	Yes
00101	3	010	8	165

3. Check for continuity between ITS control unit harness connector and ground.

ITS coi	ntrol unit		Continuity
Connector	Terminal	Ground	Continuity
M58	2	Ground	No
WIGO	3		NO

Is inspection result normal?

YES >> GO TO 4.

NO >> Repair the harness or connector.

#### **4.**CHECK CONTINUITY REAR VIEW CAMERA WASHER CONTROL UNIT TO PUMP

1. Disconnect rear view camera air pump connector.

2. Check for continuity between rear view camera washer control unit connector and pump connector.

Rear view camera	washer control unit	Rear view ca pump motor	mera air	Continuity
Connector	Terminal	Connector	Terminal	
B16	1	B17	1	Yes
	2		2	163

3. Check for continuity between rear view camera washer control unit connector and ground.

Rear view camera	washer control unit		Continuity
Connector	Terminal	Ground	Continuity
B16	1	Ground	No
ВТО	2		NO

Is inspection result normal?

YES >> GO TO 5.

NO >> Repair the harness or connector.

**5.**CHECK REAR VIEW CAMERA AIR PUMP MOTOR ITS CONTROL UNIT SUPPLY CIRCUIT

Momentarily connect a jumper from a fused battery positive to terminal 1 and from ground to terminal 2 of the rear view camera air pump motor.

Does the pump operate?

YES >> GO TO 6.

NO >> Replace the rear view camera air pump motor.

 ${f 6}.$ CHECK REAR VIEW CAMERA AIR PUMP MOTOR ITS CONTROL UNIT SUPPLY CIRCUIT

- 1. Reconnect the ITS control unit connector.
- 2. Turn the ignition switch ON.
- 3. Activate the rear view camera air pump while checking voltage between rear view camera washer control unit connector and ground.

#### **U1310 PUMP UNIT CIRCUIT**

#### < DTC/CIRCUIT DIAGNOSIS >

	Terminal			
(	(+)			Voltage
	Rear view camera washer control unit		Condition	(Approx.)
Connector	Terminals			
B16	7, 8	Ground	Activating pump	5 V

Can voltage be measured on either terminal?

YES >> Replace rear view camera washer control unit.

NO >> Replace the ITS control unit. Refer to DAS-66, "Removal and Installation - ITS Control Unit".

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#### < DTC/CIRCUIT DIAGNOSIS >

# POWER SUPPLY AND GROUND CIRCUIT

#### Diagnosis Procedure

Regarding Wiring Diagram information, refer to DAS-22, "Wiring Diagram".

# 1. CHECK ITS CONTROL UNIT POWER SUPPLY CIRCUIT

Check voltage between ITS control unit harness connector and ground.

	Terminal	Condition				
(	(+)		(+) (-)		Condition	Voltage
ITS cor	ITS control unit		Ignition	(Approx.)		
Connector	Terminal		switch			
	20 Ground	20 Ground	OFF	Battery voltage		
M58		Oround	ON	Battery voltage		
MOO	39		OFF	0 V		
	39		ON	Battery voltage		

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the ITS control unit power supply circuit.

2. CHECK ITS CONTROL UNIT GROUND CIRCUIT

1. Turn the ignition switch OFF.

2. Disconnect the ITS control unit connector.

3. Check for continuity between ITS control unit harness connector and ground.

ITS cor	ntrol unit		Continuity
Connector	Terminal	Ground	Continuity
M58	40		Yes

Is the inspection result normal?

YES >> Inspection End.

NO >> Repair the ITS control unit ground circuit.

INFOID:000000008841853

< DTC/CIRC	UIT DIAGN		ING SYS	STEMS SV		
WARNIN			VITCH (	CIRCUIT	<u>-</u>	
Compone	nt Functio	on Check			INFOID:00000008932645	A
<b>1.</b> снеск v	VARNING S	YSTEMS S	WITCH INF	PUT SIGNAL		В
2. Select th		NITOR item		1" of "AVM" wi , check the m		С
Monitor item		Condition		Monitor status	-	
	Warning sys	tems switch is	pressed	On	-	D
ITS SW 1	Warning sys	tems switch is	not pressed	OFF	-	
Is the inspec	tion result n	ormal?	1		-	Е
		tems switch S-127, "Diac				
Diagnosis	Procedu	re			INFOID:00000008932646	F
1.снеск и		SYSTEMS S		<u>das-22, "Wir</u> Gnal Input	ing Diagram".	G
2. Check v	oltage betwe	een ITS con	trol unit hai	rness connect	or and ground.	I
	Terminals		Condition		-	
(+	-)	(-)	Condition	Voltage		
ITS con	trol unit		Warning	(Approx.)		J
Connector	Terminal	Ground	systems switch		_	
M58	32		Pressed	0 V	_	K
			Released	12 V		
Is the inspec						L
NO >> (	GO TO 2.			to <u>DAS-66, "</u>	Removal and Installation - ITS Control Unit".	
<b>2.</b> CHECK V	VARNING S	YSTEMS S	WITCH			M
2. Remove		stems switcl		AS 128 "Com	ponent Inspection".	N
Is the inspec				<u>10-120, 0011</u>		IN
YES >> (	GO TO 3.		stems switc	h Refer to D	AS-138, "Removal and Installation".	DA
-	•					
Check contin	uity betwee	en warning s	ystem swite	ch harness co	nnector terminal and ground.	Ρ
Warning	g system switch	า		Continuity	-	

Warning sy	stem switch		Continuity
Connector	Terminal	Ground	Continuity
M62	8		Yes
	11 14	2	1

Is the inspection result normal?

YES >> GO TO 4.

# WARNING SYSTEMS SWITCH CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

NO >> Repair harness or connector.

#### **4.**CHECK WARNING SYSTEMS SWITCH SIGNAL INPUT CIRCUIT FOR OPEN

- 1. Disconnect the ITS control unit connector.
- Check continuity between the ITS control unit harness connector and warning system switch harness connector.

ITS cor	ITS control unit Warning system switch		Continuity	
Connector	Terminal	Connector	Terminal	Continuity
M58	32	M62	6	Yes

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair the harnesses or connectors.

5. CHECK WARNING SYSTEMS SWITCH SIGNAL INPUT CIRCUIT FOR SHORT

Check continuity between the ITS control unit harness connector and ground.

ITS cor	ntrol unit		Continuity
Connector	Terminal	Ground	Continuity
M58	32	*	No

Is the inspection result normal?

YES >> Replace the ITS control unit. Refer to DAS-66, "Removal and Installation - ITS Control Unit".

NO >> Repair the harnesses or connectors.

#### Component Inspection

INFOID:000000008932647

[LDW]

#### 1. CHECK WARNING SYSTEMS SWITCH

Check continuity of warning systems switch.

Terr	ninal	Condition	Continuity
6	8	When warning systems switch is pressed	Yes
0	0	When warning systems switch is released	No

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace the warning systems switch. Refer to DAS-138. "Removal and Installation".

	V	ARNING	SYSTEM	IS ON INDICATOR CIRCUIT	
< DTC/CIRC					[LDW]
WARNIN	G SYST	EMS ON	I INDICA	TOR CIRCUIT	
Componer	nt Functio	on Check			INFOID:000000008932648
1.CHECK W	ARNING S	YSTEMS OI		)R	
2. Select th				TOR" of "AVM" with CONSULT.	
On Off	-	systems Of systems Of		illuminates is turned OFF	
Is the inspect	<u>tion result n</u>	ormal?			
	nspection E Refer to <u>DAS</u>	nd. S-129, "Diag	nosis Proce	dure".	
Diagnosis	Procedu	re			INFOID:000000008932649
0					
Regarding W	/iring Diagra	m informatio	on, refer to D	AS-22, "Wiring Diagram".	
ega. ag					
1.CHECK W	ARNING C		OR POWER	SUPPLY CIRCUIT	
	tion switch				
2. Disconne	ect warning	system swite	ch connecto	r.	
	tion switch (		system swit	ch harness connector and ground.	
	<u> </u>	5	- <b>)</b>		
	Termir	als			
	(+)		(-)	Voltage	
	system switch		round	(Approx.)	
Connector M62	5			Battery voltage	
Is the inspect	_	ormal?			
YES >> (	GO TO 2.				
•	•	0,		cator power supply circuit.	
	/ARNING S	YSTEMS OI		OR SIGNAL FOR OPEN	
	tion switch (		arness conr	pector	
1. Turn igni					
<ol> <li>Turn igni</li> <li>Disconne</li> </ol>	ect the ITS of		5 CONTROL UNI	t harness connector and warning system s	switch harness con-
<ol> <li>Turn igni</li> <li>Disconne</li> </ol>	ect the ITS of			t harness connector and warning system s	switch harness con-
<ol> <li>Turn igni</li> <li>Disconne</li> <li>Check connector.</li> </ol>	ect the ITS of the ITS of the other sectors of the	ween the ITS		t namess connector and warning system s	switch harness con-
<ol> <li>Turn igni</li> <li>Disconne</li> <li>Check co</li> </ol>	ect the ITS of the ITS of the other sectors of the	ween the ITS	stem switch	Continuity	
<ol> <li>Turn igni</li> <li>Disconne</li> <li>Check connector.</li> </ol>	ect the ITS of continuity bet trol unit	ween the ITS	stem switch		switch harness con-
<ol> <li>Turn igni</li> <li>Disconne</li> <li>Check connector.</li> </ol> ITS controls           Connector	ect the ITS of continuity bet the ITS of continuity bet the trol unit the trol unit the trol and trol	Ween the ITS Warning sy Connector M62	stem switch Terminal	Continuity	
<ol> <li>Turn igni</li> <li>Disconne</li> <li>Check connector.</li> <li>ITS contended</li> <li>ITS contended</li> <li>M58</li> <li>Is the inspective</li> <li>YES &gt;&gt; 0</li> </ol>	trol unit Terminal 33 tion result n GO TO 3.	ween the ITS Warning sy Connector M62 ormal?	stem switch Terminal 3	- Continuity Yes	
1.       Turn igni         2.       Disconne         3.       Check connector.         ITS cont         Connector         M58       Is the inspector         YES       >> C         NO       >> F	trol unit Terminal 33 tion result n GO TO 3. Repair the h	Ween the ITS Warning sy Connector M62 ormal? arnesses or	stem switch Terminal 3 connectors.	- Continuity Yes	
1. Turn igni 2. Disconne 3. Check connector. ITS cont Connector M58 Is the inspect YES >> C NO >> F <b>3.</b> CHECK W	trol unit Terminal 33 tion result n GO TO 3. Repair the h	ween the ITS Warning sy Connector M62 ormal? arnesses or YSTEMS OI	stem switch Terminal 3 connectors. N INDICATC	- Continuity Yes	

# WARNING SYSTEMS ON INDICATOR CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

ITS cor	ntrol unit		Continuity
Connector	Terminal	Ground	Continuity
58	33	Ť	No

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair the harnesses or connectors.

**4.**CHECK WARNING SYSTEMS ON INDICATOR

Check the warning systems ON indicator. Refer to DAS-130, "Component Inspection".

Is the inspection result normal?

- YES >> Replace the ITS control unit. Refer to DAS-66. "Removal and Installation ITS Control Unit".
- NO >> Replace warning systems switch. DAS-138, "Removal and Installation".

#### Component Inspection

INFOID:000000008932650

#### 1. CHECK WARNING SYSTEMS ON INDICATOR

Apply battery voltage to warning systems switch terminals 3 and 5, and then check if the warning systems ON indicator illuminates.

Tern	ninals		Warning sys-
(+)	(-)	Condition	tems ON indica- tor
5	3	When the battery voltage is applied	On
5	5	When the battery voltage is not applied	Off

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace the warning systems switch. Refer to <u>DAS-138</u>, "Removal and Installation".

# WARNING BUZZER CIRCUIT

< DTC/CIRCUIT DIAGNOSIS > [LDW]	
WARNING BUZZER CIRCUIT	А
Component Function Check	~
1.CHECK WARNING BUZZER	В
<ol> <li>Turn the ignition switch ON.</li> <li>Select the active test item "BUZZER" of "BCM" with CONSULT.</li> <li>With operating the test item, check the operation.</li> </ol>	С
On : Warning buzzer is activated. Off : Warning buzzer is not activated.	D
<u>Is the inspection result normal?</u> YES >> Inspection End. NO >> Refer to <u>DAS-131, "Diagnosis Procedure"</u> .	E
Diagnosis Procedure	
1. CHECK WARNING BUZZER OPERATION	F
While activating the buzzer with CONSULT, listen for the buzzer sound.	
Does warning buzzer sound?         YES       >> Replace the ITS control unit. Refer to DAS-66. "Removal and Installation - ITS Control Unit".         NO       >> Replace the combination meter (buzzer).	G
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# SYMPTOM DIAGNOSIS LDW SYSTEM SYMPTOMS

#### Symptom Table

INFOID:000000008479783

#### NOTE:

For the operational conditions of Lane Departure Warning (LDW), refer to the following description.

LDW: DAS-74, "System Description"

Symp	tom	Possible cause	Inspection item/Reference page
Indicator/warning lamps do not illuminate when ignition switch OFF $\Rightarrow$ ON	Lane departure warning lamp (orange) does not illu- minate.	Combination meter     ITS control unit	Lane departure warning lamp does not turn ON Refer to <u>DAS-133, "Description"</u>
	Warning systems ON indica- tor does not illuminate.	<ul> <li>Harness between ITS control unit and warning systems switch</li> <li>Warning systems switch</li> <li>ITS control unit</li> </ul>	Warning systems ON indicator circuit Refer to <u>DAS-129. "Component</u> <u>Function Check"</u>
	Lane departure warning lamp (orange) ON indicator lamp (white) does not illumi- nate.	<ul><li>Combination meter</li><li>ITS control unit</li></ul>	<ul> <li>Lane departure warning lamp does not turn ON Refer to <u>DAS-133, "Descrip-</u> <u>tion"</u></li> </ul>
	<ul> <li>All of indicator/warning lamps does not illuminate;</li> <li>Lane departure warning lamp (orange)</li> <li>Warning systems ON indi- cator</li> </ul>	<ul> <li>Power supply and ground circuit of ITS control unit</li> <li>ITS control unit</li> </ul>	Power supply and ground circuit of ITS control unit Refer to <u>DAS-126, "Diagnosis</u> <u>Procedure"</u>
LDW system is not activated. (Indicator/warning lamps illumi- nate when ignition switch OFF $\Rightarrow$ ON)	Warning systems ON indica- tor is not turned ON ⇔ OFF when operating warning systems switch	<ul> <li>Harness between ITS control unit and warning systems switch</li> <li>Harness between warning systems switch and ground</li> <li>Warning systems switch</li> <li>ITS control unit</li> </ul>	<ul> <li>Warning systems switch circuit Refer to <u>DAS-127</u>, "Component Function Check"</li> <li>LDW system setting cannot be turned ON/OFF on the navigation screen Refer to <u>DAS-135</u>, "Diagnosis <u>Procedure"</u></li> </ul>
	Warning buzzer is not sounding. (Lane departure warning lamp is activated.)	<ul><li>Warning buzzer</li><li>ITS control unit</li></ul>	Refer to <u>DAS-131, "Component</u> Function Check"
<ul> <li>Warning functions are not timely (Example)</li> <li>Does not function when driving</li> <li>Functions when driving in a lar</li> <li>Functions in a different position</li> </ul>	ne	<ul> <li>Lane camera unit</li> <li>ITS control unit</li> </ul>	Camera calibration DAS-102, "Description"
Functions when changing the course in direction of the turn signal		Turn indicator signal (CAN) • BCM • ITS control unit	System operates even when us- ing turn signal . Refer to <u>DAS-</u> <u>134. "Description"</u>

### LANE DEPARTURE WARNING LAMP DOES NOT TURN ON

< SYMPTOM DIAGNOSIS >

# LANE DEPARTURE WARNING LAMP DOES NOT TURN ON

#### Description

The lane departure warning lamp in the combination meter does not turn ON when turning on the ignition  $\ensuremath{\,\mathsf{B}}$  switch

Diagnosis Procedure	
1. CHECK LANE DEPARTURE WARNING LAMP	С
<ol> <li>Check that "LANE DEPARTURE W/L" operates normally in "ACTIVE TEST" of "AVM".</li> <li>Operate the test items to check that the lane departure warning lamp blinks <a href="https://www.isenteck.com">Isenteck.com</a> the inspection result normal?</li> </ol>	D
YES >> GO TO 4. NO >> GO TO 2. 2.CHECK COMBINATION METER	E
Turn the ignition switch from OFF to ON to check that "LANE W/L" included in "DATA MONITOR" in "MET M&A" operates normally.	TER/ F
<u>Is the inspection result normal?</u> YES >> Replace the combination meter. Refer to <u>MWI-81, "Removal and Installation"</u> . NO >> GO TO 3.	G
<b>3.</b> CHECK SELF-DIAGNOSIS RESULTS OF COMBINATION METER	
<ol> <li>Perform "All DTC Reading" with CONSULT.</li> <li>Check if the DTC is detected in self-diagnosis results of "METER/M&amp;A". Refer to <u>MWI-27, "DTC Index</u></li> </ol>	<u>к"</u> .
<u>Is any DTC detected?</u> YES >> Repair or replace malfunctioning parts. NO >> GO TO 4.	I
4. CHECK SELF-DIAGNOSIS RESULTS OF ITS CONTROL UNIT	.1
Check if the DTC is detected in self-diagnosis results of "AVM". Refer to <u>DAS-20, "DTC Index"</u> . Is any DTC detected?	
YES >> Repair or replace malfunctioning parts. NO >> Replace the ITS control unit. Refer to <u>DAS-66. "Removal and Installation - ITS Control Unit"</u> .	K
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[LDW]

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#### THE SYSTEM OPERATES EVEN WHEN USING TURN SIGNAL

#### < SYMPTOM DIAGNOSIS >

# THE SYSTEM OPERATES EVEN WHEN USING TURN SIGNAL

#### Description

The warning of Lane Departure Warning (LDW) is activated during the use of a turn signal. **NOTE:** 

For the operational conditions of Lane Departure Warning (LDW), refer to DAS-74, "System Description".

#### Diagnosis Procedure

INFOID:000000008932672

INFOID:00000008932671

[LDW]

**1.**CHECK TURN SIGNAL OPERATION

Check that both right and left turn signals are operational.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace malfunctioning parts. Refer to <u>DAS-132, "Symptom Table"</u>.

2.CHECK SELF-DIAGNOSIS RESULTS

1. Perform "All DTC Reading" with CONSULT.

Check if the DTC is detected in self-diagnosis results of "AVM" Refer to <u>DAS-20, "DTC Index"</u>.

Is any DTC detected?

YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.

NO >> Replace ITS control unit. Refer to DAS-66, "Removal and Installation - ITS Control Unit".

#### LDW SYSTEM SETTINGS CANNOT BE TURNED ON/OFF IN VEHICLE INFOR-MATION DISPLAY

< SYMPTOM DIAGNOSIS > [LDW] LDW SYSTEM SETTINGS CANNOT BE TURNED ON/OFF IN VEHICLE IN-FORMATION DISPLAY

Description INFOID:000000008479790	В
<ul> <li>LDW system setting is not selectable on the navigation screen.</li> <li>NOTE: When the ignition switch is in ACC position, LDW system setting cannot be changed.</li> <li>"Lane Departure Warning" is not indicated on the navigation screen.</li> <li>The switching between ON and OFF cannot be performed by operating the navigation system.</li> </ul>	С
<ul> <li>The item of "Lane Departure Warning" on the navigation screen is not active.</li> <li>After turning ON the ignition switch or starting the engine, LDW setting of the navigation system cannot be selected for several tens of seconds under the following conditions:</li> <li>After replacing AV control unit.</li> </ul>	D
<ul> <li>After erasing connection history of the navigation system.</li> <li>After erasing self-diagnosis results of AV control unit.</li> <li>The LDW or LDP system setting differs from the one set at the previous driving.</li> </ul> NOTE:	E
Turn OFF the ignition switch and wait for 5 seconds or more.	I
Diagnosis Procedure	
1. CHECK LDW SYSTEM SETTING	G
<ol> <li>Start the engine.</li> <li>Check that the LDW system settings is selectable on the navigation screen.</li> <li><u>Is the inspection result normal?</u></li> </ol>	Н
YES >> GO TO 3. NO >> GO TO 2.	I
2.PERFORM THE SELF-DIAGNOSIS	1
<ol> <li>Perform "All DTC Reading" with CONSULT.</li> <li>Check if the DTC is detected in self-diagnosis results of "AVM", "MULTI AV" and "METER/M&amp;A". Refer to the following.</li> <li>AVM: <u>DAS-20, "DTC Index"</u></li> </ol>	J
<ul> <li>AVM: <u>DA3-20, DTC Index</u></li> <li>MULTI AV (with BOSE): <u>AV-309, "DTC Index"</u></li> <li>MULTI AV (without BOSE): <u>AV-216, "DTC Index"</u></li> <li>METER/M&amp;A: <u>MWI-27, "DTC Index"</u></li> </ul>	K
<u>Is any DTC detected?</u> YES >> Repair or replace malfunctioning parts. NO >> Inspection End.	L
3. CHECK DATA MONITOR OF ITS CONTROL UNIT	M
Check that "LDW SELECT" operates normally in "DATA MONITOR" of "AVM" with CONSULT.	
Is the inspection result normal?	Ν
YES >> Refer to <u>DAS-80, "CONSULT Function (AVM)"</u> . NO >> GO TO 4.	IN
4.CHECK MULTIFUNCTION SWITCH	DAS
Operate the multifunction switch to check that the audio, navigation system, and air conditioner operate prop- erly.	
Is the inspection result normal?	Ρ
<ul> <li>YES &gt;&gt; Replace the ITS control unit. Refer to <u>DAS-66, "Removal and Installation - ITS Control Unit"</u>.</li> <li>NO &gt;&gt; Repair or replace malfunctioning parts.</li> </ul>	

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#### NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS >

# NORMAL OPERATING CONDITION

#### Description

INFOID:000000008479792

[LDW]

#### PRECAUTIONS FOR LANE DEPARTURE WARNING (LDW)

- LDW system is only a warning device to inform the driver of a potential unintended lane departure. It will not steer the vehicle or prevent loss of control. It is the driver's responsibility to stay alert, drive safely, keep the vehicle in the traveling lane, and be in control of the vehicle at all times.
- LDW system will not operate at speeds below approximately 70 km/h (45 MPH) or if it cannot detect lane markers.
- Excessive noise will interfere with the warning chime sound, and the chime may not be heard.
- LDW system may not function properly under the following conditions:
- On roads where there are multiple parallel lane markers; lane markers that are faded or not painted clearly; yellow painted lane markers; non-standard lane markers; or lane markers covered with water, dirt or snow, etc.
- On roads where the discontinued lane markers are still detectable.
- On roads where there are sharp curves.
- On roads where there are sharply contrasting objects, such as shadows, snow, water, wheel ruts, seams or lines remaining after road repairs. (The LDW system could detect these items as lane markers.)
- On roads where the traveling lane merges or separates.
- When the vehicle's traveling direction does not align with the lane marker.
- When traveling close to other vehicle in front of the vehicle, which obstructs the lane camera unit detection range.
- When rain, snow or dirt adheres to the windshield in front of the lane camera unit.
- When a sudden change in brightness occurs. (For example, when the vehicle enters or exits a tunnel or under a bridge.)

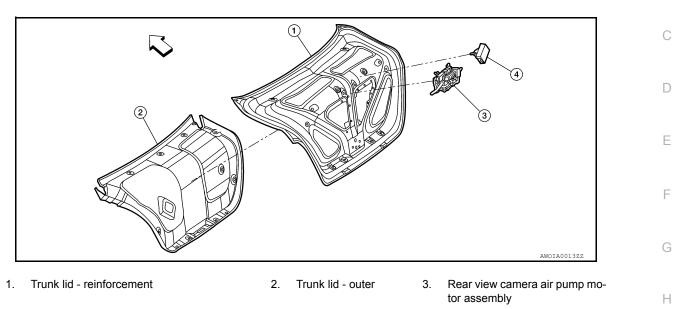
# < REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION CONTROL UNIT

#### Exploded View

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INFOID:000000008942910



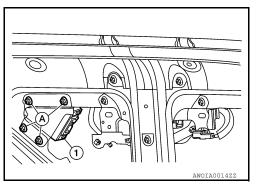
4. Rear view camera washer control unit

Removal and Installation - Rear View Camera Washer Control Unit

#### REMOVAL AND INSTALLATION

Removal

- 1. Remove the trunk lid finisher. Refer to INT-33, "TRUNK LID FINISHER : Removal and Installation".
- 2. Disconnect the harness connector from the rear view camera washer control unit.
- 3. Remove the rear view camera washer control unit nuts (A).
- 4. Remove the rear view camera washer control unit (1).



Installation Installation is in the reverse order of removal.

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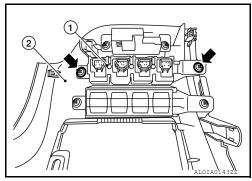
#### < REMOVAL AND INSTALLATION >

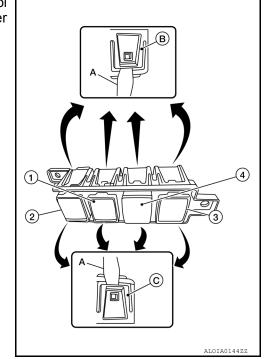
WARNING SYSTEMS SWITCH

Removal and Installation

#### REMOVAL

- 1. Remove the instrument lower panel LH. Refer to IP-21, "Removal and Installation".
- Remove screws (
   that retain the upper switch carrier (1) to the instrument lower panel LH (2).

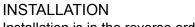




 Release upper tab (B) and lower tab (C) using a suitable tool (A), then remove the warning system switch (4) from the upper switch carrier.

(1) Trunk opener switch

- (2) VDC switch
- (3) Heated steering wheel switch



Installation is in the reverse order of removal.

INFOID:000000008524993

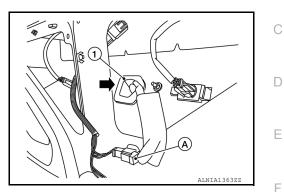
< REMOVAL AND INSTALLATION >

# REAR VIEW CAMERA

### Removal and Installation

#### REMOVAL

- 1. Remove trunk lid finisher. Refer to <u>INT-33</u>, "Exploded View".
- 2. Disconnect the harness connector (A) from rear view camera.
- 3. Push the rear view camera (1) in direction shown (←) and pull out to remove.



[LDW]

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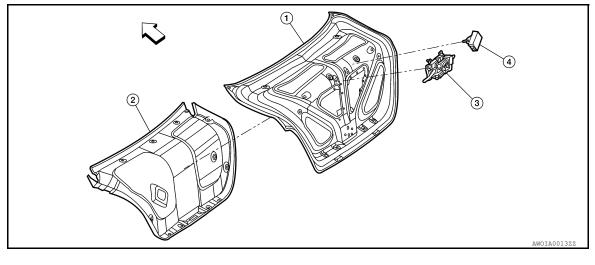
INSTALLATION Installation is in the reverse order of removal.

#### < REMOVAL AND INSTALLATION > **AIR PUMP**

# **Exploded View**

INFOID:00000008942911

[LDW]



Trunk lid - reinforcement 1.

Rear view camera washer control unit

Trunk lid - outer 2.

⟨⊐ : Front

Rear view camera air pump motor assembly

3.

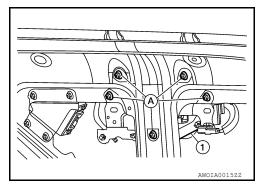
#### Removal and Installation

**REMOVAL AND INSTALLATION** 

Removal

4.

- Remove the trunk lid finisher. Refer to <u>INT-33, "TRUNK LID FINISHER : Removal and Installation"</u>.
- 2. Disconnect the air tube from the rear view camera air pump motor.
- Disconnect the harness connector from the rear view camera air pump motor.
- 4. Remove the rear view camera air pump motor bracket nuts (A).
- 5. Remove the rear view camera air pump motor assembly (1).



Installation Installation is in the reverse order of removal.

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# PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRF-TENSIONER" INFOID:00000008726196

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. D

#### WARNING:

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

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

#### WARNING:

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

#### Precaution for Work

- 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 Κ 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.

#### Precautions For Harness Repair

ITS communication uses a twisted pair line. Be careful when repairing it.

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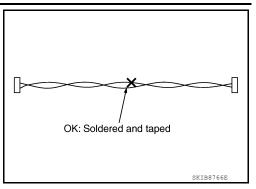
# PRECAUTIONS

#### < PRECAUTION >

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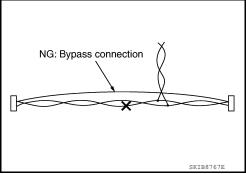
• Solder the repaired area and wrap tape around the soldered area. **NOTE:** 

A fray of twisted lines must be within 110 mm (4.33 in).



• Bypass connection is never allowed at the repaired area. **NOTE:** 

Bypass connection may cause ITS communication error. The spliced wire becomes separated and the characteristics of twisted line are lost.



#### Precaution for BSW System Service

WARNING:

Be cautious of traffic conditions and other vehicles when performing a road test. CAUTION:

- Never use the BSW system when driving with free rollers or on a chassis dynamometer.
- Never perform BSW ACTIVE TESTS while driving.
- Never disassemble or alter the rear view camera.
- Do not use the rear view camera when removed from the vehicle.
- Never disable the BSW system without the consent of the customer.

OBSERVE THE FOLLOWING ITEMS IN ORDER TO KEEP THE BSW SYSTEM OPERATING PROPERLY:

#### Rear view Camera Maintenance

The rear view camera for the BSW system is located in the truck lid. To keep the BSW system operating properly and prevent a malfunction, be sure to observe the following:

- Always keep the camera lens area clean.
- Do not attach bumper stickers (including transparent materials) or install an accessory near the rear viewcamera.
- Do not strike or damage the areas around the rear view camera.
- Do not touch the camera lens (except for cleaning) or remove the rear view camera.

# PREPARATION

Revision: August 2012

PREPARATION	
Special Service Tool	

PREPARATION

< PREPARATION >

The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name		Description	(
 (J-46534) Trim tool set		Removing trim components	[
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	AWJIA04832Z		F

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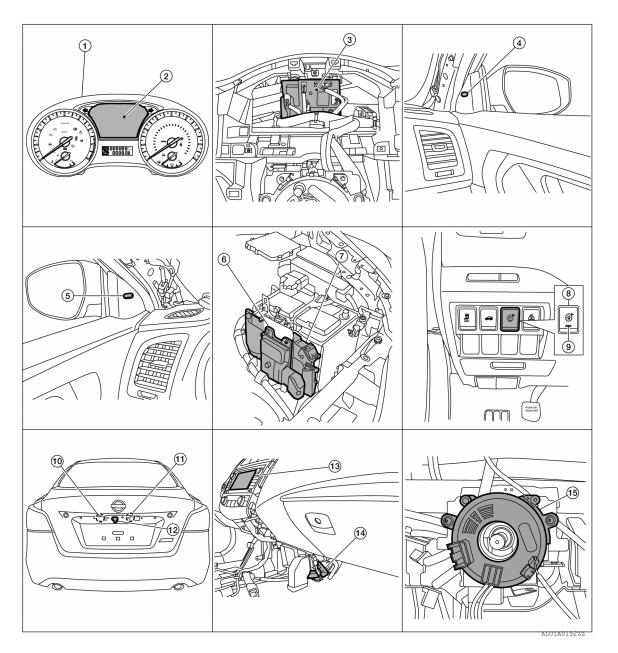
#### < SYSTEM DESCRIPTION >

SYSTEM DESCRIPTION COMPONENT PARTS

# **Component Parts Location**

INFOID:000000008479801

[BSW]



- 1. Combination meter
- 4. Blind spot warning indicator RH
- 7. ECM
- 10. Rear view camera washer control unit
- 13. AV control unit (center display)

#### **Component Description**

- 2. Vehicle information display
- 5. Blind spot warning indicator LH
- 8. Warning systems switch
- Rear view camera air pump motor
   ITS control unit
- (view with center console removed)
- 3. BCM (view with combination meter removed)
- 6. TCM
- 9. Warning systems ON indicator
- 12. Rear view camera
- 15. Steering angle sensor (view with steering wheel removed)

INFOID:000000008479802

# **COMPONENT PARTS**

#### < SYSTEM DESCRIPTION >

[BSW]
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Component	Description
ITS control unit	<ul> <li>Being connected with rear view camera via ITS communication, receives vehicle detection signal and transmits Blind Spot Warning indicator signal and Blind Spot Warning indicator dimmer signal to the rear view camera</li> <li>Being connected with lane camera unit via ITS communication, receives detected lane condition signal</li> <li>Receives steering angle sensor signal from steering angle sensor via CAN communication</li> <li>Judges a Blind Spot Warning indicator ON/OFF state and an approach state to the lane marker, based on each signal.</li> <li>Activates the warning buzzer and warning systems ON indicator</li> <li>Transmits Blind Spot Warning ON indicator signal to combination meter via CAN communication</li> </ul>
Blind Spot Warning indicator LH/ RH	Receives Blind Spot Warning indicator operation signal from rear view camera and turns OFF, turns ON or blinks
Warning systems switch	Inputs the switch signal to ITS control unit
Warning systems ON indicator (On the warning systems switch)	Indicates BSW system status
Rear view camera	<ul> <li>Detects the lane marker by the built-in camera</li> <li>Transmits detected lane condition signal to ITS control unit</li> </ul>
ABS actuator and electric unit (control unit)	<ul> <li>Transmits vehicle speed signal to ITS control unit via CAN communication</li> <li>Transmits yaw rate signal/side G sensor signal to ITS control unit via CAN communication</li> </ul>
Buzzer (combination meter)	Receives buzzer signal from ITS control unit and sounds buzzer.
Combination meter	<ul> <li>Turns the Blind Spot Warning indicator ON/OFF according to the signals from the ITS control unit via CAN communication</li> <li>Receives Blind Spot Warning ON indicator signal via CAN communication.</li> </ul>
Steering angle sensor	Transmits steering angle sensor signal to ITS control unit via CAN communication
ВСМ	<ul> <li>Transmits turn signal indicator to ITS control unit via CAN communication</li> <li>Transmits dimmer signal to ITS control unit via CAN communication</li> </ul>
ECM	Transmits engine speed signal to ITS control unit via CAN communication
ТСМ	Transmits the output shaft speed signal, input speed signal, current gear position signal and shift position signal to ITS control unit via CAN communication
AV control unit	Receives the various systems and camera signals via CAN communication and routes them to the center display
Center display	Displays the various system screen signals according to the priority level received via CAN com- munication
Rear view camera washer control unit	Controls the air pump to drive air to the rear camera lens according to the signals received from the ITS control unit
Rear view camera air pump motor	Drives air to the rear camera lens according to the signals received from the pump control unit

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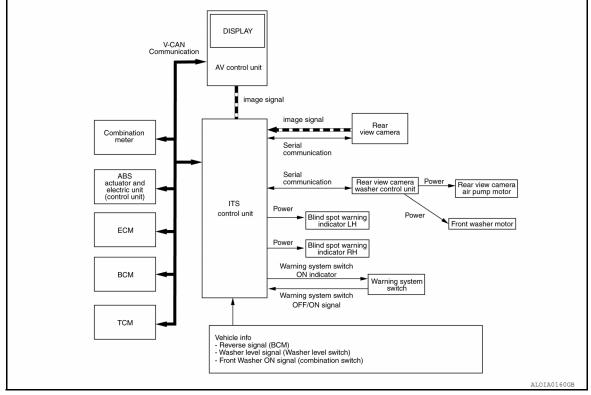
# SYSTEM

# System Description

INFOID:000000008479803

[BSW]

## SYSTEM DIAGRAM



#### CONTROL UNIT INPUT/OUTPUT SIGNAL ITEM

Control unit receives signals via CAN communication. It also detects vehicle conditions that are necessary for BSW control.

Input Signal Item

Transmit unit	S	ignal name	Description
ECM	CAN Communication	Engine status signal	Receive engine status
ВСМ	CAN communication	Door open status signal	Receive door open status
BCIVI	CAN communication	Light status signal	Receive light status
ABS actuator and electric unit (control unit)	CAN communication	Wheel speed signal	Receive wheel speed
ТСМ	CAN communication	Shift selector position signal	Receive shift selector position
Combination meter	CAN communication	Moving Object Detection ON/ OFF signal	Receive the ON/OFF status for Moving Object Detection function
Rear view cam- era	NTSC	Video signal	Receive Rear View Camera image from camera for Mov- ing Object Detection function in ITS controller

#### **Output Signal Item**

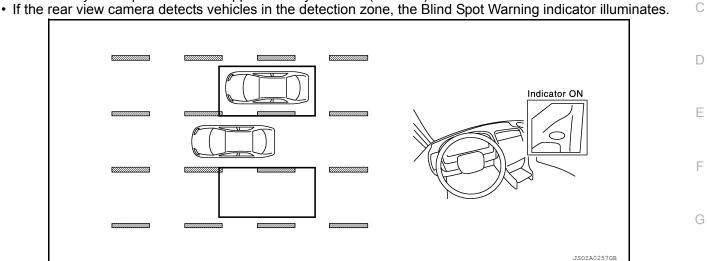
Reception unit		Signal name	Description
Combination meter	CAN communication	Buzzer request	Transmits a buzzer request signal when the moving object is detected
Display	CAN communication	Visual signal request	Transmits a visual signal request from ITS Controller to display Rear View while the shift selector is in R (reverse)

# SYSTEM

#### < SYSTEM DESCRIPTION >

#### FUNCTION DESCRIPTION

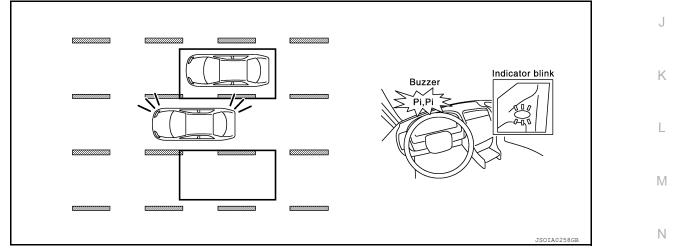
- The BSW system can help alert the driver of other vehicles in adjacent lanes when changing lanes.
- The BSW system uses rear view camera near the rear bumper to detect vehicles in an adjacent lane.
- The rear view camera can detect vehicles on either side of vehicle within the detection zone shown as illustrated.
- This detection zone starts from the back of the vehicle and extends approximately 3.0 m (10 ft) behind the rear bumper, and approximately 13.0 m (10 ft) sideways.
- The BSW system operates above approximately 32 km/h (20 MPH).



 If the driver then activates the turn signal, a buzzer will sound twice and the Blind Spot Warning indicator will H blink.

#### NOTE:

A buzzer sounds if the rear view camera has already detected vehicles when the driver activates the turn signal. If a vehicle comes into the detection zone after the driver activates the turn signal, then only the Blind Spot Warning indicator blinks and no buzzer sounds.



#### **BSW SYSTEM OPERATION DESCRIPTION**

- · Control unit enables BSW system.
- The control unit turns on the BSW system when the warning systems switch is turned ON.
- Rear view camera detects a vehicle in the adjacent lane, and transmits the vehicle detection signal to control unit.
- Control unit starts the control as follows, based on a vehicle detection signal, turn signal and dimmer signal transmitted from BCM via CAN communication:
- Blind Spot Warning indicator signal and Blind Spot Warning indicator dimmer signal transmission to rear view camera.
- Buzzer signal transmission to warning buzzer.
- Rear view camera transmits an indicator operation signal to the Blind Spot Warning indicator according to Blind Spot Warning indicator signal and Blind Spot Warning indicator dimmer signal.

Operation Condition of BSW System

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# SYSTEM

#### < SYSTEM DESCRIPTION >

- When the warning systems switch is turned ON<sup>\*</sup>.
- When the vehicle drives at 32 km/h (20 MPH) or more in the forward direction.

#### NOTE:

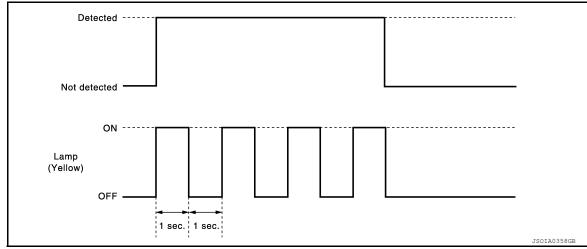
\*: When the BSW system setting on the vehicle information display screen is ON.

- After the operating conditions of warning are satisfied, the warning continues until the vehicle speed is reduced below approximately 29 km/h (18 MPH)
- The BSW system may not function properly, depending on the situation.

#### BULB CHECK ACTION AND FAIL-SAFE INDICATION

Vehicle condition/Driver's operation	Blind Spot Warning/ Blind Spot Intervention indicator	Warning systems ON indicator	Indication on the combination meter
When DTC is detected	OFF	ON	OFF → Orange Malfunction BSW See Owner's Manual
Temporary disabled status	OFF	ON	BSW light (white) will blink
When rear view camera needs cleaning	OFF	ON	Unavailable: Clean Rear Camera
When the warning systems switch is pressed (When the settings of LDW system and BSW system on the vehicle information screen are "OFF")	OFF	Blink	_

#### \*: Blinking cycle when there is a rear view camera blockage condition or lane camera unit high temperature condition



#### NOTE:

Time shown in the figure is approximate.

## Fail-safe (ITS Control Unit)

INFOID:000000008681903

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

System	Warning lamp/Indicator lamp	Description
Blind Spot Warning (BSW)	Blind Spot Warning lamp	Cancel
Lane Departure Warning (LDW)	Lane Departure Warning indicator	Cancel

# < SYSTEM DESCRIPTION >

# OPERATION

Swit	tch Name and Function	INFOID:00000008479811	А
			В
			С
		() ALOIA01092Z	D
No.	Name	Function	Е
1	Warning systems switch	Turns BSW system ON/OFF (When the setting of BSW system on the vehicle information display setting screen is ON)	F
Sys	tem Display and Warning	INFOID:00000008479812	
INDI	CATOR AND WARNING LAMP		G



No.	Name	Description	L
1	Warning systems ON indicator	Indicates that the LDW system and/or BSW system is ON	n
2	Blind Spot Warning lamp (orange)	<ul> <li>Turns ON when Blind Spot Warning system is malfunctioning</li> <li>Blinks during the following conditions:</li> <li>DTC is detected or system is temporarily disabled.</li> <li>When rear view camera blockage is detected.</li> </ul>	L

# DISPLAY AND WARNING OPERATION

Vehicle condition/ Driver's operation			on	Ac	tion	
Warning systems ON indicator	Vehicle speed (Approx.) [km/h (MPH)]	Turn signal condition	Status of ve- hicle detec- tion within detection area	Indication on the Blind Spot Warning indicator	Buzzer	N DAS
OFF	—	—	—	OFF	OFF	

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# **OPERATION**

#### < SYSTEM DESCRIPTION >

	Vehicle condition/	Driver's operatio	n	Ac	tion	
Warning systems ON indicator	Vehicle speed (Approx.) [km/h (MPH)]	Turn signal condition	Status of ve- hicle detec- tion within detection area	Indication on the Blind Spot Warning indicator	Buzzer	
	Less than ap- prox. 29km/h (18MPH)	_	_	OFF	OFF	
		_	Vehicle is absent	OFF	OFF	
		OFF	Vehicle is detected	ON	OFF	
ON	Approx. 32 km/h (20 MPH) or more	ON (vehicle de- tected direc- tion)	Before turn signal oper- ates Vehicle is detected	Blink 200 ms Indicator ON Indicator OFF 200 ms JSOIA0251GB Blink	Short continuous beep Buzzer ON Buzzer OFF 550 ms JSOIA0252GB	
		tion)		Vehicle is detected af- ter turn sig- nal operates	200 ms Indicator OFF 200 ms JSOIA0251GB	OFF

#### NOTE:

• If vehicle speed exceeds approximately 32 km/h (20 MPH), BSW function operates until the vehicle speed becomes lower than approximately 29 km/h (18 MPH).

- Time shown in the figure is approximate.
- Whenever Blind Spot Warning system is turned off, the warning systems ON indicator remains OFF.

< SYSTEM DESCRIPTION >

# HANDLING PRECAUTION

## Precautions for Blind Spot Warning

#### REAR VIEW CAMERA HANDLING

The rear camera unit "1" for the LDW/BSW systems is located above the rear license plate.

To keep the proper operation of the LDW systems and prevent a system malfunction, be sure to observe the following:

- Always keep the camera lens clean. Be careful not to damage the nozzle of the automatic washer and blower.
- Do not attach "license plate accessories" that reflect light.
- Do not strike or damage the areas around the camera unit.

#### BLIND SPOT WARNING (BSW)

- BSW system is not a replacement for proper driving procedure and is not designed to prevent contact with vehicles or objects. When changing lanes, always use the side and rear mirrors and turn and look in the direction you will move to ensure it is safe to change lanes. Never rely solely on the BSW system.
- The camera unit may not detect properly under the following conditions:
- When towing a trailer.
- When strong light enters the camera unit. (For example, direct sunlight or headlight from the rear.)
- When ambient light changes instantly. (For example, when the vehicle enters or exits a tunnel or passes under a bridge.)
- Automatic washer and blower may not be able to secure detection capability when excessive dirt adheres on the camera lens.
- Excessive noise (e.g. audio system volume, open vehicle window) will interfere with the chime sound, and it may not be heard.
- The camera unit may not be able to detect when certain objects are present such as:
- Pedestrians, bicycles, animals.
- Several types of vehicles such as motorcycles.
- Oncoming vehicles.
- A vehicle approaching rapidly from behind
- A vehicle which your vehicle overtakes rapidly.
- The camera unit may not be able to detect properly when your vehicle travels beside the middle section of a vehicle with a long wheelbase (e.g., trailer truck, semi-trailer, tractor).
- The camera unit is designed to ignore most stationary objects, however objects such as guardrails, walls, foliage and parked vehicles may occasionally be detected. This is a normal operating condition.
- The camera unit may detect reflection image of vehicles or roadside objects that are not actually in the detection zone, especially when the road is wet.

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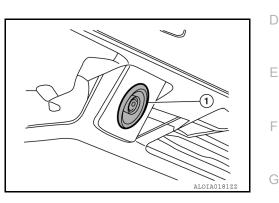
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# **DIAGNOSIS SYSTEM (ITS CONTROL UNIT)**

#### < SYSTEM DESCRIPTION >

# DIAGNOSIS SYSTEM (ITS CONTROL UNIT)

# CONSULT Function (AVM)

INFOID:000000008842031

[BSW]

#### APPLICATION ITEMS

CONSULT performs the following functions via CAN communication using ITS control unit.

Diagnosis mode	Description
Self Diagnostic Result	Displays the name of a malfunctioning system stored in the ITS control unit
Data Monitor	Displays ITS control unit input/output data in real time
Work support	Displays causes of automatic system cancellation occurred during system control
Active Test	Enables an operational check of a load by transmitting a driving signal from the ITS control unit to the load
ECU identification	Displays ITS control unit part number
Configuration	The vehicle specification can be written when replacing the ITS control unit

#### SELF DIAGNOSTIC RESULT

Refer to DAS-86, "DTC Index".

#### DATA MONITOR

Monitored item [Unit]	Description
ST ANGLE SENSOR SIGNAL [On/Off]	Indicates [On/Off] status as judged from ITS control unit (Angle sensor transmits angle signal through CAN communication)
REVERSE SIGNAL [On/Off]	Indicates [On/Off] status as judged from ITS control unit (TCM transmits reverse signal through CAN communication)
VEHICLE SPEED SIGNAL [On/Off]	Indicates vehicle speed calculated from ITS control unit through CAN communication [ABS ac- tuator and electric unit (control unit) transmits vehicle speed signal (wheel speed) through CAN communication]
CAMERA SWITCH SIGNAL [On/Off]	Indicates [On/Off] status of camera switch signal as judged from ITS control unit
CAMERA OFF SIGNAL [On/Off]	Indicates [On/Off] status of camera OFF signal as judged from ITS control unit
ST ANGLE SENSOR TYPE [Absolute/Not]	Indicates whether steering angle sensor type is absolute or not (ON means "controlling")
STEERING GEAR RATIO TYPE [Type 0/1]	Indicates the type of the steering gear ratio (type 1 or 2)
STEERING POSITION [LHD/RHD]	Indicates the steering position (LHD or RHD)
REAR CAMERA IMAGE SIGNAL [OK/Not]	Indicates the status of the rear camera image as read from ITS control unit through dedicated ITS communication lines
WASH SW [ON/OFF]	Indicates the state of the wash switch indicator output
R-CAMERA COMM STATUS [OK/Not]	Indicates the status of the rear camera communication status as read from ITS control unit through dedicated ITS communication lines
R-CAMERA COMM LINE [OK/Not]	Indicates the condition of the rear camera communication line whether transmitting properly through dedicated ITS communication lines
PUMP COMM STATUS [OK/NG]	Indicates the state of the communication signal from pump control unit
ILL [On/Off]	Indicates [On/Off] status of the illumination signal
ITS SW 1 [On/Off]	Indicates the state of the warning system switch as seen by the ITS control unit

# **DIAGNOSIS SYSTEM (ITS CONTROL UNIT)**

#### < SYSTEM DESCRIPTION >

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Monitored item [Unit]	Description	А
ITS SW 1 IND [On/Off]	Indicates the state of the warning system switch indicator output	
TURN SIGNAL [Left/N/Right]	Indicates [Left/N/Right] status of the turn signal output	В
Rear Camera Image Output signal [OK/NG]	Indicates the input state of video image from rear camera	С
ITS SW_2 [ON/OFF/No setting]	Indicates the state of the warning system secondary switch as seen by the ITS control unit	
ITS SW_2 IND [ON/OFF/No setting]	Indicates the state of the warning system secondary switch indicator output	D

#### WORK SUPPORT

Work support items	Description	
PREDICTIVE COURSE LINE DISPLAY	Setting whether predictive guide line displays or not	
INITIALIZE CAMERA IMAGE CALIBRATION	Start the initialization process of the rear camera	
STEERING ANGLE SENSOR ADJUSTMENT	Execute register neutral point of steering angle sensor	
CALIBRATING CAMERA IM- AGE (REAR CAMERA)	Displays the various values of the rear camera during the calibration process	
REAR WIDE-VIEW FIXED GUIDE LINE CORRECTION	Adjustment the position of fixed guide line on rear wide view	
REAR CAMERA ITS	Displays and sets camera image calibration values	
CAUSE OF LDW CANCEL	Displays the information about reason of LDW cancellation	
CAUSE OF BSW CANCEL	Displays the information about reason of BSW cancellation	

# ACTIVE TEST

## **CAUTION:**

- Never perform "Active Test" while driving the vehicle.
- The "Active Test" cannot be performed when the following systems warning indicators are illuminated:
- Lane Departure Warning indicator
- Blind Spot Warning indicator
- Place the shift selector to P (park) position, and then perform the test.

Test item		Description	M
WASH ACTIVE	ON	Activates the washer to clean the lens of rear camera	
WASH ACTIVE	OFF		Ν
LED LH	ON	Flashes the left side LED light for ITS system	
	OFF		
LED RH	ON	Flashes the right side LED light for ITS system	DAS
	OFF		
AIR ACTIVE	ON	Activates the air pump to clean the lens of rear camera	D
AIRACTIVE	OFF		Г
AIR & WASH ACTIVE	ON	Activates the air pump and washer to clean the lens of rear camera	
	OFF		

#### **BSW ON INDICATOR**

# **DIAGNOSIS SYSTEM (ITS CONTROL UNIT)**

#### < SYSTEM DESCRIPTION >

Test item	Oper- ation	Description	Blind Spot Warning ON indicator lamp (Yellow)
BSW ON INDICATOR	Off	Stops transmitting the Blind Spot Warning ON indicator signal below to end the test	Off
BSW ON INDICATOR	On	Transmits the Blind Spot Warning ON indicator signal to the warning lamp on the door	ON
Washer	Off	Stops transmitting activate signal to washer below to end the test	Off
	On	Transmits activate signal to washer	ON
Air pump	Off	Stops transmitting activate signal to air pump below to end the test	Off
	On	Transmits activate signal to air pump	ON

#### ECU IDENTIFICATION

ITS control unit part number is displayed.

#### CONFIGURATION

The specifications of the vehicle can be written and read in the ITS control unit when replaced.

# < ECU DIAGNOSIS INFORMATION >

# ECU DIAGNOSIS INFORMATION ITS CONTROL UNIT

# **Reference Value**

#### VALUES ON THE DIAGNOSIS TOOL

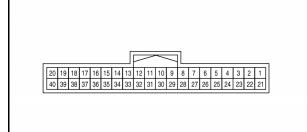
Monitor item		Condition	Value/Status	0
	Ignition quitch ON	Steering angle signal is received	On	-
STEERING ANGLE	Ignition switch ON	Steering angle signal is not received	Off	D
	Ignition quitch ON	Shift selector in R (reverse)	On	_
REVERSE SIGNAL	Ignition switch ON	Shift selector is not in R (reverse)	Off	
	While driving	Vehicle speed signal is received	On	- E
VEHICLE SPEED	While driving	Vehicle speed signal is not received	Off	-
CAMERA SWITCH	Ignition owitch ON	Camera switch is pressed	On	F
CAMERA SWITCH	Ignition switch ON	Camera switch is not pressed	Off	_
CAMERA OFF	lamitian avritate ON	Purpose switch is pressed	On	
SWITCH	Ignition switch ON	Purpose switch is not pressed	Off	G
TYPE OF STEER AN-	Ignition quitch ON	Steering angle sensor type is displayed	Absolute	_
GLE SENSOR	Ignition switch ON	Steering angle sensor type is not received	Not	H
TYPE OF STEER	lamitian avitab ON	Pattern 1 type of steering gear ratio displayed	Pattern 1	
GEAR RATIO	Ignition switch ON	Pattern 2 type of steering gear ratio displayed	Pattern 2	
LEFT OR RIGHT	lamitian avitab ON	It recognizes steering position is left	LHD	
STEER	Ignition switch ON	It recognizes steering position is right	RHD	_
REAR CAMERA		Rear camera serial status is OK	OK	J
COMM STATUS	Ignition switch ON	Rear camera serial status is not OK	NG	0
REAR CAMERA		Rear camera serial communication signal is received	OK	_
COMM LINE	Ignition switch ON	Rear camera serial communication signal is not received	NG	K
	Invition quitab ON	Illumination is ON	On	
ILL	Ignition switch ON	Illumination is OFF	Off	-
	Institute excitate ON	ITS switch is pressed	On	- L
ITS SW_1	Ignition switch ON	ITS switch is not pressed	Off	
	lamitian avitab ON	Indicator of ITS switch 1 is lighting	On	M
ITS SW 1 IND	Ignition switch ON	Indicator of ITS switch 1 is not lighting	Off	
		Turn signal left is received	Left	-
TURN SIGNAL	Ignition switch ON	Turn signal neutral is received	Ν	- N
		Turn signal right is received	Right	_
	Institute excitate ON	Camera image signal is received	On	DAS
R-CAMERA IMAGE	Ignition switch ON	Camera image signal is not received	Off	
ITS SW_2	Ignition switch ON	For this vehicle, the displaying is fixed	No setting	
ITS SW 2 IND	Ignition switch ON	For this vehicle, the displaying is fixed	No setting	P
WASH SWITCH SIG-	Institute autitute ONI	Wash switch signal is pressed	On	_
NAL	Ignition switch ON	Wash switch signal is not pressed	Off	_
PUMP COMM STA-	Institute autitate ON	Pump communication signal is received	On	_
TUS	Ignition switch ON	Pump communication signal is not received	Off	_

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INFOID:00000008842081

# < ECU DIAGNOSIS INFORMATION >

## **TERMINAL LAYOUT**



# 56 55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 72 71 70 69 68 67 66 65 64 63 62 61 60 59 58 57

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## PHYSICAL VALUES

	nal No. color)	Description			Condition	Value
+	_	Signal name	Input/ Output		Condition	(Approx.)
1	Ground	Washer level switch	Input	Ignition	When washer fluid is low (switch closed)	0 V
(BR)	Ground		input	switch ON	When washer fluid is not low (switch open)	12 V
2 (Y)	Ground	Washer signal pump to camera	Input	Ignition swi	tch ON	5 V
3 (LG)	Ground	Washer signal camera to pump	Output	Ignition swi	tch ON	5 V
7 (P)	Ground	CAN -L	_	_	_	—
17	Ground	SOW LED signal R	Output	While	LDW/BSW detected	12 V
(G)	Gibunu	SOW ELD Signal IX	Output	driving	LDW/BSW is not detected	0 V
20 (G)	Ground	Battery supply	Input			12 V
22 (BR)	Ground	Serial ground	Output	_		0 V
27 (L)	Ground	CAN -H	_	_	_	_
28	Ground	Reverse	Input	Ignition	Shift selector in R (re- verse)	12 V
(R)	Ground	Trevelse	input	switch ON	Shift selector not in R (re- verse)	0 V
32	Ground	Cancel SW output	Input	Ignition	Cancel switch pressed	0 V
(P)	Gibunu		mput	switch ON	Cancel switch not pressed	12 V
33	Ground	LED input	Output	Ignition	Warning system is ON	12 V
(BG)	Gibunu		Output	switch ON	Warning system is OFF	0 V
37	Ground	SOW LED signal L	Output	While	LDW/BSW detected	12 V
(W)	Ciouna	SOW ELD Signal L	Output	driving	LDW/BSW is not detected	0 V
39 (BG)	Ground	Ignition power supply	Input	Ignition swi	tch ON	Battery Voltage
40 (B)	Ground	Ground	_	_	_	0 V
50, 53	Ground	Shield	_	—	_	0 V
51 (R)	Ground	RR CAM GND	Output	Ignition switch ON	_	0 V

H.S.

# **ITS CONTROL UNIT**

#### < ECU DIAGNOSIS INFORMATION >

Terminal No. Description А (Wire color) Value Condition (Approx.) Input/ Signal name + Output В 52 RR CAM ON 6 V Ground Output Ignition switch ON (W) С (V 66 RR CAM COMP + Ground Input Ignition switch ON (B) D )179ZZ Ε 68 Ground **RR CAM CONT** Input Ignition switch ON 5 V (G) F 69 Ground RR CAM COMP + Input Ignition switch ON (B) 17922 Н

## Fail-safe

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

System	Buzzer	Warning Indicator lamp	Description	
Lane Departure Warning (LDW)	Low-pitched tone	Lane Departure Warning lamp	Cancel	
Blind Spot Warning (BSW)	High-pitched tone	Blind Spot Warning lamp	Cancel	ŀ
Moving Object Detection (MOD)	Low-pitched tone	Warning lamp MOD icon (on camera screen)	Cancel	

# **DTC Inspection Priority Chart**

If multiple DTCs are detected simultaneously, check them one by one depending on the following DTC inspection priority chart.

Priority	Detected items (DTC)	
1	U1000: CAN COMM CIRCUIT     U1010: CONTROL UNIT (CAN)	N
2	U1305: CAMERA IMAGE CALIB     U1308: CAMERA CONFIG	DA
3	<ul> <li>C1A39: STRG SEN CIR</li> <li>U0428: STRG SEN CAN CIR 2</li> <li>U111A: REAR CAMERA IMAGE SIGNAL</li> <li>U1232: ST ANGLE SEN CALIB</li> <li>U1309: PUMP UNIT CURRENT</li> <li>U130B: REAR CAMERA COMM ERROR</li> <li>U1310: PUMP UNIT CIRCUIT</li> </ul>	F
4	C1A03: VHCL SPEED SE CIRC     C1A04: VDC FAIL     U0122: VDC P-RUN DIAG     U0416: VDC CHECKSUM DIAG	

INFOID:000000008842082

INFOID:000000008842083

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# **ITS CONTROL UNIT**

#### < ECU DIAGNOSIS INFORMATION >

#### **DTC Index**

[BSW]

INFOID:000000008842084

#### NOTE:

- The details of time display are as follows:
- 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  $0 \rightarrow 1 \rightarrow 2 \cdots 38 \rightarrow 49$  after returning to the normal condition whenever the ignition switch OFF  $\rightarrow$  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.
  - Systems for fail-safe
  - A: Lane Departure Warning (LDW)
  - B: Blind Spot Warning (BSW)
  - C: Moving Object Detection (MOD)

DTC		١	Narning larr	р	Fail-safe	
CONSULT	CONSULT display	Lane Departure Warning	Blind Spot Warning	Moving Object Detection	System	Reference
C1A03	VHCL SPEED SE CIRC	ON	ON	ON	A, B, C	DAS-249
C1A04	VDC FAIL	ON	ON	ON	A, B, C	DAS-250
C1A39	STRG SEN CIR	ON	ON	ON	A, B, C	DAS-251
NO DTC IS DETECTED. FURTHER TESTING MAY BE RE- QUIRED	NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED	_	_	_	_	_
U0122	VDC P-RUN DIAG	ON	ON	ON	A, B, C	DAS-252
U0416	VDC CHECKSUM DIAG	ON	ON	ON	A, B, C	DAS-253
U0428	STRG SEN CAN CIR 2	ON	ON	ON	A, B, C	DAS-254
U1000 <sup>NOTE</sup>	CAN COMM CIRCUIT	ON	ON	ON	A, B, C	<u>DAS-255</u>
U1010	CONTROL UNIT (CAN)	ON	ON	ON	A, B, C	DAS-256
U111A	REAR CAMERA IMAGE SIGNAL	ON	ON	ON	A, B, C	DAS-257
U1232	ST ANGLE SEN CALIB	ON	ON	ON	A, B, C	DAS-259
U1305	CAMERA IMAGE CALIB	ON	ON	ON	A, B, C	DAS-260
U1308	CAMERA CONFIG	ON	ON	ON	A, B, C	DAS-261
U1309	PUMP UNIT CURRENT	ON	ON	ON	A, B, C	DAS-262
U130B	REAR CAMERA COMM ERROR	ON	ON	ON	A, B, C	DAS-265
U1310	PUMP UNIT CIRCUIT	ON	ON	ON	A, B, C	DAS-266

#### NOTE:

With the detection of "U1000" some systems do not perform the fail-safe operation.

# **ITS CONTROL UNIT**

#### < ECU DIAGNOSIS INFORMATION >

A system controlling based on a signal received from the control unit performs fail-safe operation when the communication with the ITS control unit becomes inoperable.

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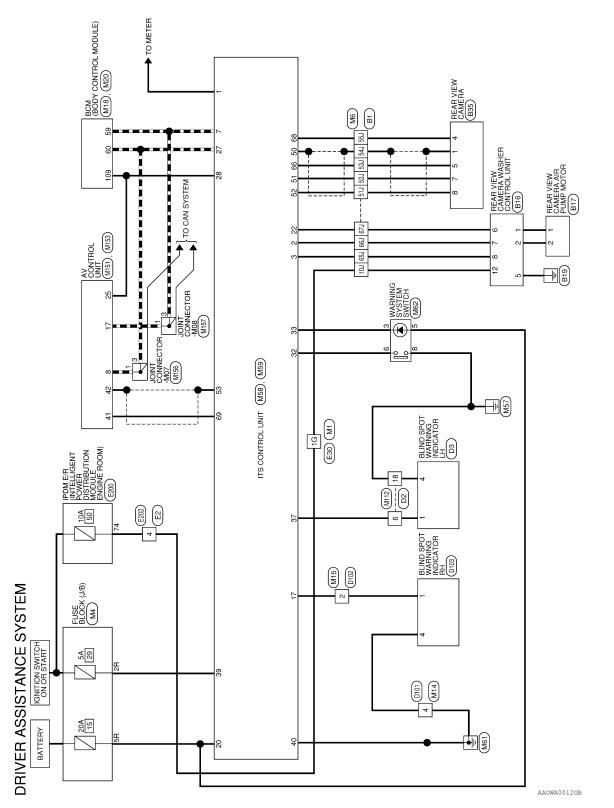
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[BSW]

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# WIRING DIAGRAM DRIVER ASSISTANCE SYSTEMS

# Wiring Diagram



# DRIVER ASSISTANCE SYSTEMS

< WIRING DIAGRAM >

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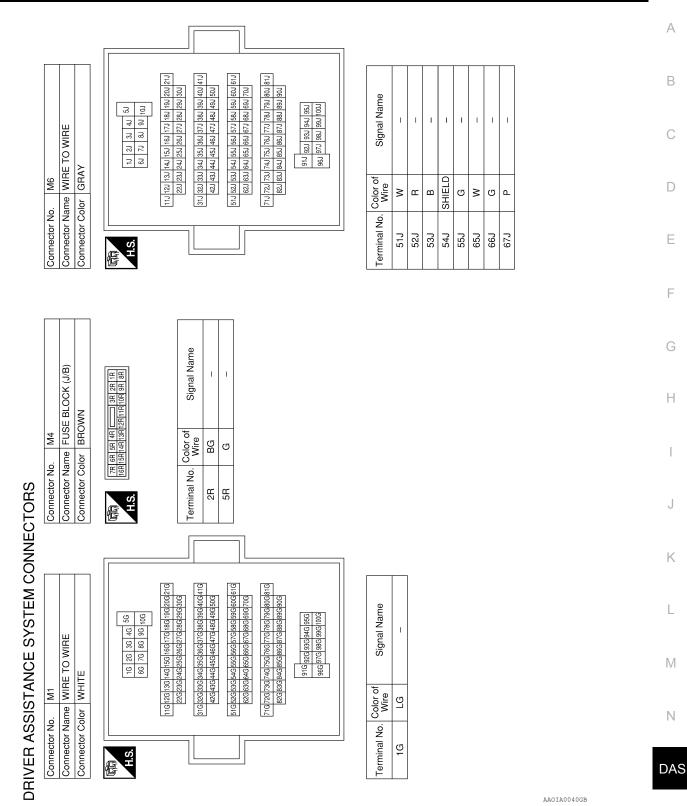
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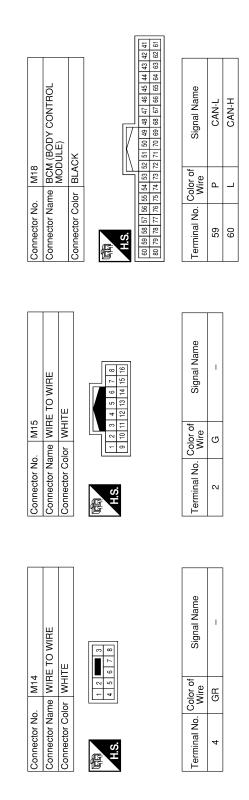


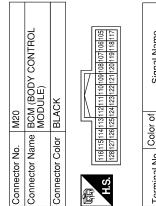


< WIRING DIAGRAM >



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Signal Name	<b>REVERSE SIGNAL</b>	
Color of Wire	G	
Terminal No.	109	

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nect S.		WHITE								
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际讯 H.S. 20 19 18 17 16				8	-	-		25	-	I
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80				10	I	I		27	_	CAN-H
20 19 18 17 16				=	I	1	-	28	щ	REV
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40 39 38 37 36	3/ 36 35 34 33 32 31	2 31 30 29 28 27 26 29 24 23 22	22 21	13	I	1	-	30	I	I
Terminal No	Color of	Sinnal Name		14	I	1		31	I	I
	Wire			15	I	1		32	٩.	CANCEL SW OUTPUT
-	BB	WASH LVL SW		16	I	1	-	33	BG	LED INPUT
2	U	FROM PUMP TO CAMFRA C/II		17	σ	SOW LED SIGNAL R		34	I	I
	3	FROM CAMERA		18	I	I	-	35	I	I
m	^	C/U TO PUMP		19	I	I		36	Ι	I
4	ı	I		20	σ	₿ B		37	≥	SOW LED SIGNAL L
5	I	I		21	ı	1	-	38	I	I
9	I	I		22	٩	SERIAL GND		68	BG	IGN
				23	-	I		40	В	GND
Connector No.	. M59			Tauminel Ne	Color of	Circle Name		Territori		
Connector Name		ITS CONTROL UNIT			Wire	olgilal ivalile			Wire	oigilal Nalle
Connector Color	lor WHITE	TE		46	I	I	-	59	I	I
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56	55 54 53 52	51 50 49 48 47 46 45 44 43 42 41	2 41	49	I	I		62	I	I
72	1 70 69 68	71 70 69 68 67 66 65 64 63 62 61 60 59 58	3 57	50	SHIELD	1		63	I	I
				51	œ	RR CAM GND		64	I	I
Terminal No	Color of	Sinnal Name		52	8	RR CAM ON		65	I	I
	Wire			53	SHIELD	1		99	ш	RR CAM COMP +
41	ı	I		54	I	1		67	I	I
42	I	I		55	I	1		68	σ	RR CAM CONT
43	L	I		56	I	1		69	в	COMP OUT +
44	I	I		57	I	1		20	I	I
45	ı	I		58	I	I		71	I	I

# **DRIVER ASSISTANCE SYSTEMS**

#### < WIRING DIAGRAM >

Signal Name

Color of Wire

Signal Name

Color of Wire

Terminal No.

Connector No. M58

Revision: August 2012

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Connector No. M151 Connector Name (WITH BOSE AUDIO SYSTEM - WITH NAVI)		Terminal No. Color of Signal Name		17 P CAN-L							Ī	Connector No. M157	Connector Name JOINT CONNECTOR-M08 Connector Color WHITE		頃頃 H.S.		Terminal No. Color of Signal Name	-	с.
M112 WIRE TO WIRE WHITE	6         7         8         9         10         11         12           18         19         20         21         22         23         24	Signal Name	I	I									JOINT CONNECTOR-M07 WHITE		2 1 1 0		Signal Name	1	
Connector No. M112 Connector Name WIRE T Connector Color WHITE	H.S. 13 14 15 16 17	Terminal No. Color of Wire	-	18 B							Ī	Connector No. M156	Connector Name JOINT C Connector Color WHITE		国本 H.S.	l	Terminal No. Color of Wire	-	لـ ۳
M62 WARNING SYSTEM SWITCH WHITE	3 3 2	Signal Name	I	1	1	1	1	I	I	I			AV CONTROL UNIT (WITH BOSE AUDIO SYSTEM - WITH NAVI)	E		25         26         27         28         29         30         31         32           37         38         39         40         41         42         43         44	Signal Name	REVERSE	CAMERA +
		Color of Wire	æ	1	ß	m	σ	٩	1	в	Ī	o. M153				21 22 23 24 2 33 34 35 36 3	Color of Wire	σ	m
Connector No. Connector Name Connector Color	H.S.	Terminal No.	-	2	с С	4	5	9	7	8		Connector No.	Connector Name	Connector Color		H.S.	Terminal No.	25	41

# DRIVER ASSISTANCE SYSTEMS

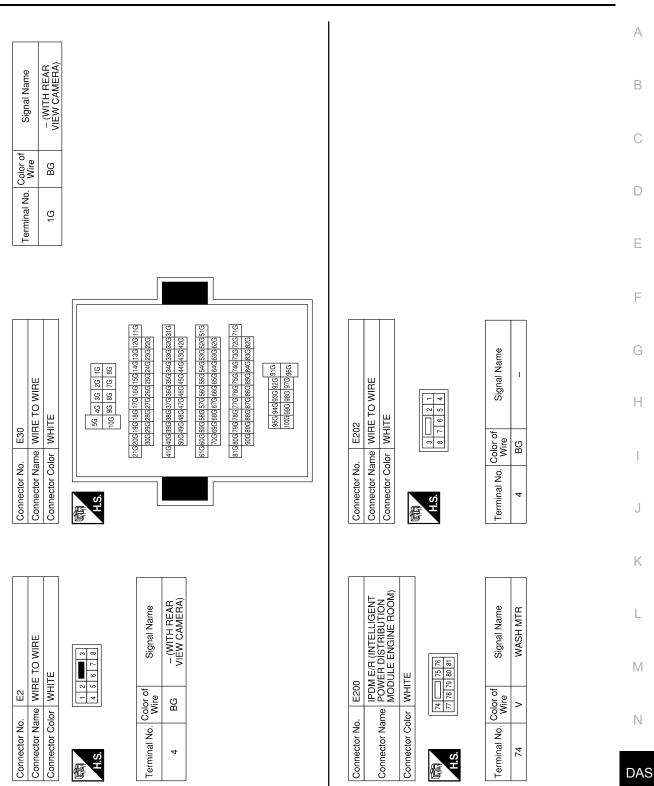
< WIRING DIAGRAM >

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< WIRING DIAGRAM >

[BSW]



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Connector No. D103 Connector Name BLIND SPOT WARNING INDICATOR RH

Connector Color WHITE

Signal Name

Mire B

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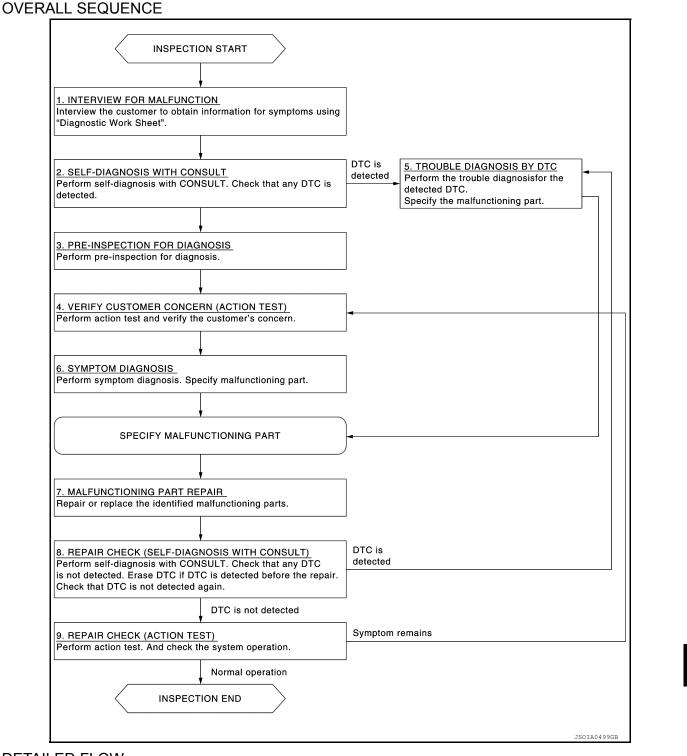
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# BASIC INSPECTION DIAGNOSIS AND REPAIR WORK FLOW

# Work Flow

#### INFOID:00000008841992



## DETAILED FLOW

## **1.**INTERVIEW FOR MALFUNCTION

Interview the customer to obtain information about symptoms using "Diagnostic Work Sheet". (Refer to <u>DAS-240, "Diagnostic Work Sheet"</u>.)

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# DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

>> 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 "AVM".

Is any DTC detected?

YES >> GO TO 5.

NO >> GO TO 3.

**3.** PRE-INSPECTION FOR DIAGNOSIS

Perform pre-inspection for diagnosis. Refer to DAS-242, "Inspection Procedure".

>> GO TO 4.

#### **4.**ACTION TEST

Perform BSW system action test to check the operation status. Refer to DAS-171, "Description".

>> GO TO 6.

**5.**TROUBLE DIAGNOSIS BY DTC

Perform trouble diagnosis for the detected DTC. Specify a malfunctioning part. Refer to <u>DAS-20, "DTC Index"</u> (ITS CONTROL UNIT).

>> GO TO 7.

**6.**SYMPTOM DIAGNOSIS

Perform symptom diagnosis. Specify malfunctioning part. Refer to DAS-132, "Symptom Table".

>> GO TO 7.

7.MALFUNCTION PART REPAIR

Repair or replace the identified malfunctioning parts.

>> GO TO 8.

**8**.REPAIR CHECK (SELF-DIAGNOSIS WITH CONSULT)

Perform self-diagnosis with CONSULT. Check that any DTC is not detected. Erase DTC if DTC is detected before the repair. Check that DTC is not detected again.

Is any DTC detected?

YES >> GO TO 5. NO >> GO TO 9.

**9.**REPAIR CHECK (ACTION TEST)

Perform BSW system action test. Also check the system operation.

Does it operate normally?

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

Diagnostic Work Sheet

#### DESCRIPTION

In general, each customer feels differently about an incident. It is important to fully understand the symptoms or conditions for a customer complaint.

There are many operating conditions that lead to the malfunction. A good grasp of such conditions can make troubleshooting faster and more accurate.

Some conditions may cause the lane departure warning lamp to stay ON.

#### **DAS-168**

INFOID:000000008841993

# DIAGNOSIS AND REPAIR WORK FLOW

#### < BASIC INSPECTION >

Utilize a work sheet sample to organize all of the information for troubleshooting.

KEY POINTS

- WHAT..... System and functions
- WHEN..... Date, Frequencies
- WHERE..... Road conditions
- HOW..... Operating conditions, Symptoms

#### WORK SHEET SAMPLE

Customer name MR/MS		Model and Year		VIN		
Engine #		Trans.		Mileage		
Incident Date		Manuf. Date		In Service I	Date	
Symptoms	1					
	Lane departure warning lamp	Stays ON     Turned ON occasionally	☐ Stays ☐ Other		Blinks	)
Indicator/Warning lamps	Warning systems     ON indicator	☐ Stays ON	☐ Stays ☐ Other		Blinks	)
	☐ Other lamps ( )	☐ Stays ON ☐ Turned ON occasionally	☐ Stays ☐ Other		Blinks	)
	☐ When using BSW					
Functions	All functions do not opera Warning function does not Yawing function does not					
Functions	Functions are untimely.	g the course in the turn signa function when driving on lan s when driving in a lane.				
		in a different position from t	the actual p )	osition.		
Conditions	Functions		the actual p )	osition.		
	Functions		)	osition.		
Conditions Frequency Light conditions	Functions     Others (	s in a different position from t	) htly	osition.	ng light)	
Frequency	Functions     Others (     Continuously     Not affected     In the daytime	At night	) ntly	unset (Stro	ng light)	)
Frequency Light conditions Driving conditions	Functions     Others (     Continuously     Not affected     In the daytime     Direct light     Not affected	At night Control to the second	) ntly ] Sunrise/s ] Others (	unset (Stro	ng light)	)
Frequency Light conditions Driving conditions Weather conditions	Functions     Others (     Continuously     Not affected     In the daytime     Direct light     Not affected     Vehicle speed     Not affected     Fine	s in a different position from t	) ntly Sunrise/s Others ( Vehicle is Snowing	unset (Stro	ng light)	)
Frequency Light conditions	Functions     Others (     Continuously     Not affected     In the daytime     Direct light     Not affected     Vehicle speed     Not affected     Fine     Clouding     Not affected     Highway	in a different position from t  At night Backlight MPH ( km/h) Raining In town Winding roads	) Thtly Cunrise/s Others ( Vehicle is Snowing Others (	unset (Stro	ng light)	) ) )

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< BASIC INSPECTION >

# PRE-INSPECTION FOR DIAGNOSIS

**Inspection Procedure** 

INFOID:000000008841994

[BSW]

**1.**CHECK CAMERA LENS

Is camera lens contaminated with foreign materials?

YES >> Clean camera lens.

NO >> GO TO 2.

2. CHECK REAR VIEW CAMERA UNIT INSTALLATION CONDITION

Check rear view camera unit installation condition (installation position, properly fitted).

Is it properly installed?

YES >> GO TO 3.

NO >> Install rear view camera unit properly, and perform rear view camera calibration. Refer to <u>DAS-</u> <u>245. "Description"</u>.

3. CHECK VEHICLE HEIGHT

Check vehicle height. Refer to FSU-26, "Wheelarch Height (Unladen\*1)".

Is vehicle height appropriate?

YES >> Inspection End.

NO >> Repair vehicle to appropriate height.

# ACTION TEST

ACTION TEST	
< BASIC INSPECTION >	
ACTION TEST	
Description	INFOID:0
<ul> <li>Perform action test to verify the customer's concern.</li> <li>Perform action test and check the system operation after system diagnosis.</li> <li>WARNING:</li> <li>Be careful of traffic conditions and safety around the vehicle when performing road test.</li> <li>CAUTION:</li> </ul>	
<ul> <li>Fully understand the following items well before the road test;</li> <li>Precautions: Refer to <u>DAS-70</u>, "<u>Precaution for LDW System Service</u>".</li> <li>System description for LDW: Refer to <u>DAS-74</u>, "<u>System Description</u>".</li> <li>System description for BSW: Refer to <u>DAS-146</u>, "<u>System Description</u>".</li> <li>System description for MOD: Refer to <u>DAS-219</u>, "<u>System Description</u>".</li> <li>Handling precaution: Refer to <u>DAS-79</u>, "<u>Precautions for Lane Departure Warning</u>".</li> </ul>	
Inspection Procedure	INFOID:0
<ul> <li>WARNING: Be careful of traffic conditions and safety around the vehicle when performing road test. CAUTION:</li> <li>Fully understand the following items well before the road test;</li> <li>Precautions: Refer to DAS-70, "Precaution for LDW System Service".</li> <li>System description for LDW: Refer to DAS-74, "System Description".</li> <li>System description for BSW: Refer to DAS-146, "System Description".</li> <li>System description for MOD: Refer to DAS-219, "System Description".</li> <li>Handling precaution: Refer to DAS-79, "Precautions for Lane Departure Warning".</li> <li>CHECK BSW SYSTEM SETTING</li> </ul>	
<ol> <li>Start the engine.</li> <li>Check that the BSW system setting can be enabled/disabled on the vehicle information disposed.</li> <li>Turn OFF the ignition switch and wait for 30 seconds or more.</li> </ol>	olay.

Check that the previous setting is saved when the engine starts again. 4.

# >> GO TO 2. 2. ACTION TEST FOR BSW

- 1. Enable the setting of the BSW system on the vehicle information display.
- 2. Turn warning systems switch ON (warning systems ON indicator is ON).
- 3. Check the BSW operation according to the following table.

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# **ACTION TEST**

#### < BASIC INSPECTION >

Vehicle	condition/Driver's	operation			
Warning systems ON indicator	Vehicle speed (Approx.) [km/h (MPH)]	Turn signal con- dition	Status of vehi- cle detection within detec- tion area	Indication on the combination meter	Buzzer
	Less than Ap- prox. 29 km/h (18 MPH)	_	_	OFF	OFF
		_	Vehicle is ab- sent	OFF	OFF
		OFF	Vehicle is de- tected	ON	OFF
ON	Approx. 32 km/h (20 MPH) or more	ON (vehicle de-	Before turn signal oper- ates vehicle is detected	Blink 200 ms Indicator ON Indicator OFF 200 ms JSOIA0251GB	Short continuous beeps Buzzer ON Buzzer OFF 550 ms
		tected direction)	Vehicle is de- tected after turn signal op- erates	Blink 200 ms Indicator ON Indicator OFF 200 ms JSOIA0251GB	OFF

#### NOTE:

After the operating conditions of warning are satisfied, the warning continues until the vehicle speed reaches approximately 60 km/h (40 MPH). Refer to <u>DAS-146</u>, "System Description".

>> Inspection End.

ADDITIONAL SERVICE WHEN REPLACING REAR VIEW CAMERA < BASIC INSPECTION > [BSW]
ADDITIONAL SERVICE WHEN REPLACING REAR VIEW CAMERA
Description
Always perform the calibration after removing and installing or replacing the rear view camera. <b>CAUTION:</b> <b>The system does not operate normally unless the rear view camera aiming adjustment is performed.</b> <b>Always perform it.</b>
Work Procedure
1.CAMERA AIMING ADJUSTMENT
Perform the camera aiming adjustment with CONSULT. Refer to DAS-245, "Description".
>> GO TO 2. 2.PERFORM SELF-DIAGNOSIS
Perform the self-diagnosis of rear view camera with CONSULT. Check if any DTC is detected. <u>Is any DTC detected?</u> YES >> Perform the trouble diagnosis for the detected DTC. Refer to <u>DAS-86, "DTC Index"</u> . NO >> GO TO 3.
<ul> <li>3.LDW/BSW SYSTEM ACTION TEST</li> <li>1. Perform the LDW/BSW system action test. Refer to <u>DAS-171, "Description"</u>.</li> </ul>
2. Check that the LDW/BSW system operates normally. Is the inspection result normal?
YES >> Inspection End. NO >> GO TO 4.
4.LDW/BSW ACTIVE TEST
<ol> <li>Perform WASH ACTIVE on Active Test using CONSULT.</li> <li>Perform air and washer tube connection check by AIR &amp; WASH ACTIVE on Active Test:</li> </ol>
(1) Washer fluid output count on the rear view camera is 3 to 5 times $\rightarrow$ OK (2) Washer fluid output count on the rear view camera is 10 times $\rightarrow$ Check tube with yellow marking (3) Washer fluid output count on the rear view camera is 1 time $\rightarrow$ Check tube with green marking (4) No washer fluid output $\rightarrow$ Check tube with blue marking or check value
(4) No washer fluid output $\rightarrow$ Check tube with blue marking or check valve
>> Inspection End.

< BASIC INSPECTION >

# REAR VIEW CAMERA CALIBRATION

## Description

Always perform the calibration after removing and installing or replacing the rear view camera. **CAUTION:** 

- Place the vehicle on level ground when the calibration is performed.
- Follow the CONSULT when performing the calibration. (Rear view camera calibration cannot be operated without CONSULT).

#### Work Procedure (Preparation)

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INFOID:00000008841999

[BSW]

#### **1.**PERFORM SELF-DIAGNOSIS

Perform self-diagnosis of the ITS control unit.

Is any DTC detected?

Except "U1308">> Perform diagnosis on the detected DTC and repair or replace the applicable item. Refer to DAS-86. "DTC Index".

"U1308" or no DTC>> GO TO 2.

#### 2.PREPARATION BEFORE REAR VIEW CAMERA CALIBRATION

#### NOTE:

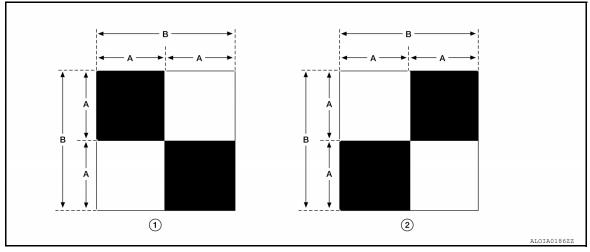
Select the "AVM" to diagnose the ITS control unit by CONSULT.

- 1. Perform pre-inspection for diagnosis. Refer to DAS-242, "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. Situate vehicle where the camera is exposed at an atmosphere temperature between 0°C (32°F) and 30°C (86°F)
- 6. Move the shift selector to P (Park) and release the parking brake.
- 7. Clean the rear view camera.

>> GO TO 3.

## $\mathbf{3}$ . PREPARATION OF CALIBRATION TARGET MARK

Prepare the calibration target mark according to the following figure:



#### (1) : Left and right targets

- (2) : Center target
- (A) : Side of the black or white area = 200 mm (7.87 in)
- (B) : Side of the square target
- = 400 mm (15.75 in)

< BASIC INSPECTION >

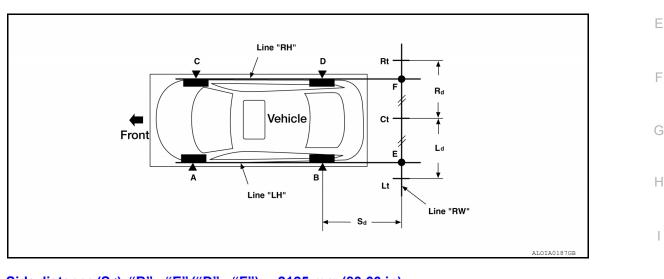
>> Refer to DAS-246. "Work Procedure (Target Setting)".

#### Work Procedure (Target Setting)

#### **CAUTION:**

- Perform this operation in a horizontal position where there is a clear view for 3 m (9.84 ft) backward and 4 m (13.12 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 it shines by the reflected light of the sun or lighting.
- The target may not be detected when there is the same pattern of black and white as the target when the pattern is within 0.5 m (1.64 ft) from either side and upward/downward position from the target. (It is desirable that the vehicle is positioned on a single-color floor.)

#### **1.**TARGET SETTING



1500 mm (59.06 in)

Side distance (Sd): "B" – "E" ("D" – "F") 2125 mm (83.66 in) : Left distance (Ld): "Ct" – "Lt" : 1500 mm (59.06 in)

Right distance (Rd): "Ct" – "Rt"

Mark points "A", "B", "C" and "D" at the center of the lateral sur-

## face of each wheel.

1.

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 2.2 m (7.22 ft) or more at the rear from the rear axle.

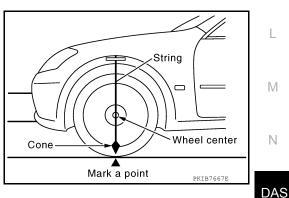
- 3. Mark point "E" on the line "LH" at the positions 2125 mm (83.66 in) from point "B".
- 4. Draw line "RH" passing through points "C" and "D" on the right side of vehicle in the same way as step 2.
- 5. Mark point "F" on the line "RH" at the positions 2125 mm (83.66 in) from point "D".
- 6. Draw line "RW" passing through the points "E" and "F" on the rear of the vehicle. **NOTE:**

Approximately 1.8 m (5.91 ft) or more at both left and right sides from vehicle center.

7. Mark point "Ct" at the center of point "E" and "F" on the line "RW". CAUTION:

#### Make sure that "E" to "Ct" is equal to "F" to "Ct".

- 8. Mark point "Lt" and "Rt" on the line "RW" at the positions 1500 mm (59.06 in) from point "Ct".
- 9. Position the center of the target mark to point of "Ct".



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# DAS-175

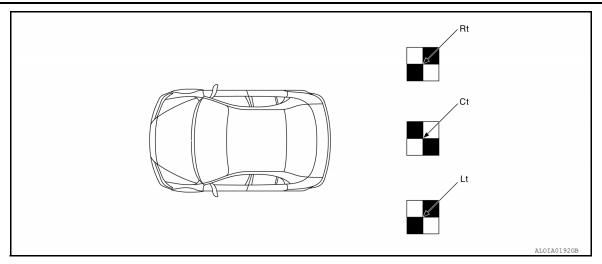
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#### **CAUTION:**

Make sure that the black/white pattern of the center target is rotated as compared with the left and right targets.

>> Go to DAS-247, "Work Procedure (Rear View Camera Calibration)".

Work Procedure (Rear View Camera Calibration)

INFOID:000000008842002

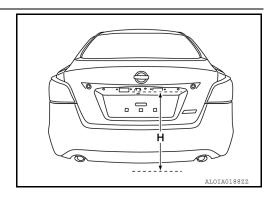
#### CAUTION:

Perform the calibration under the specified vehicle condition (fuel full, no-load, specified tire pressure, etc.). Refer to <u>DAS-245, "Work Procedure (Preparation)"</u>.

**1.**CHECK REAR VIEW CAMERA HEIGHT

Measure the rear view camera height "H".

>> GO TO 2.



# 2. REAR VIEW CAMERA CALIBRATION

- 1. Select "Work Support" on "AVM" with CONSULT.
- 2. Select "REAR CAMERA ITS".
- 3. Select "OK".
- 4. Input the rear view camera height "H", and then touch "APPLY".
- 5. Confirm that the same value is displayed on the center display.
- 6. Confirm the following items:
- The target should be accurately placed.
- The vehicle should be stopped.
- The vehicle should be under the specified vehicle condition.
- 7. Select "Start" to perform calibration.

#### CAUTION:

- Perform the calibration after the ignition or engine has been kept on for at least 10 minutes to stabilize camera.
- Operate CONSULT outside the vehicle, and close all doors to retain appropriate vehicle altitude.
- 8. Confirm the displayed item.
- "Completed": Select "Completion".
- Otherwise, perform the following services:

#### < BASIC INSPECTION >

Displaye	ed item	Possible cause	Service procedure
	_	Temporary malfunction in internal processing of the rear view camera.	Go back to Step 1
SUSPENSION	00H Routine not ac- tivated	Rear view camera unit malfunction.	Position the target appro- priately again. Perform
	10H Writing error	<ul> <li>Temporary malfunction in internal processing of the rear view camera.</li> <li>Rear view camera malfunction.</li> </ul>	the aiming again. Refer to <u>DAS-246, "Work Pro-</u> <u>cedure (Target Setting)"</u> .
X AIMING NG Y (X: 0 - 7, Y: 1 - 8)	_	A target is not-yet-placed. (The rear view camera cannot detect a target.)	Position the target appro- priately again. Perform
ABNORMALLY COM- PLETED	_	<ul> <li>The position of the rear view camera is not correct.</li> <li>Inappropriate work environment.</li> <li>Inappropriate vehicle condition.</li> </ul>	the aiming again. Refer to <u>DAS-245, "Work Pro-</u> <u>cedure (Preparation)"</u> .

#### NOTE:

Replace camera unit if "00H Routine not activated" or "10H Writing error" are repeatedly indicated during the above two services are performed.

9. Confirm that "Completed" is displayed and then select "End" to close the calibration procedure.

>> GO TO 3.

# **3.**PERFORM SELF-DIAGNOSIS

Perform self-diagnosis of ITS control unit with CONSULT.

Is any DTC detected?

YES >> Perform diagnosis on the detected DTC and repair or replace the applicable item. Refer to DAS-20, "DTC Index". >> GO TO 4. NO

**4**.ACTION TEST

Test the system operation by action test. Refer to DAS-171, "Description".

>> Work End.

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# **DTC/CIRCUIT DIAGNOSIS** C1A03 VEHICLE SPEED SENSOR

DTC Logic

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
C1A03	VHCL SPEED SEN CIRC	ITS control unit detects that the result of calcu- lation about velocity has error.	ABS actuator and electric unit (control unit)     ITS control unit

## DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

Turn ignition ON. 1.

- Perform "All DTC Reading" with CONSULT. 2.
- Check if the "C1A03" is detected as the current malfunction in "Self Diagnostic Result" of "AVM". 3.

Is "C1A03" detected as the current malfunction?

>> Refer to <u>DAS-249</u>, "Diagnosis Procedure".
>> Refer to <u>GI-47</u>, "Intermittent Incident". YES

NO

# **Diagnosis** Procedure

INFOID:000000008841875

# 1. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) SELF-DIAGNOSIS RESULTS

Check if any DTC is detected in "Self Diagnostic Result" of "ABS".

Is any DTC detected?

YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. Refer to BRC-44, "DTC Index".

NO >> GO TO 2.

2. CHECK ALL UNIT SELF-DIANOSIS RESULTS

Check if any DTC is detected except for ITS control unit about VDC in "ALL DTC READING" with CONSULT. Is any DTC detected except for ITS?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-123, "Removal and Installation".
- NO >> Replace ITS control unit. Refer to DAS-66, "Removal and Installation - ITS Control Unit".

INFOID:000000008841874

# C1A04 ABS/TCS/VDC SYSTEM

#### < DTC/CIRCUIT DIAGNOSIS >

# C1A04 ABS/TCS/VDC SYSTEM

# DTC Logic

[BSW]

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INFOID:000000008841878

.PERFORM DTC CONFIRMATION PROCEDURE         . Turn ignition ON.         . Perform "All DTC Reading" with CONSULT.         3. Check if the "C1A04" is detected as the current malfunction in "Self Diagnostic Result" of "AVM". <u>s "C1A04" detected as the current malfunction?</u> YES       >> Refer to <u>DAS-249, "Diagnosis Procedure"</u> .         NO       >> Inspection End.         Diagnosis Procedure       Information of "ABS".         .CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) SELF-DIAGNOSIS RESULTS         Check if any DTC is detected in "Self Diagnostic Result" of "ABS". <u>s any DTC detected?</u> YES       >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. Refer         BRC-44, "DTC Index".         NO       >> GO TO 2.         CHECK ALL UNIT SELF-DIANOSIS RESULTS         Check if any DTC is detected except for ITS control unit about VDC in "ALL DTC READING" with CONSU	)	auses
<ul> <li>2. Perform "All DTC Reading" with CONSULT.</li> <li>3. Check if the "C1A04" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".</li> <li>Is "C1A04" detected as the current malfunction? YES &gt;&gt; Refer to DAS-249, "Diagnosis Procedure". NO &gt;&gt; Inspection End.</li> <li>Diagnosis Procedure</li> <li>1. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) SELF-DIAGNOSIS RESULTS</li> <li>Check if any DTC is detected in "Self Diagnostic Result" of "ABS".</li> <li>Is any DTC detected? YES &gt;&gt; Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. Refe BRC-44, "DTC Index".</li> <li>NO &gt;&gt; GO TO 2.</li> <li>2. CHECK ALL UNIT SELF-DIANOSIS RESULTS</li> <li>Check if any DTC is detected except for ITS control unit about VDC in "ALL DTC READING" with CONSU</li> </ul>	means "VDC is failed" from ABS actuator and unit)	ectric unit (control
<ol> <li>Turn ignition ON.</li> <li>Perform "All DTC Reading" with CONSULT.</li> <li>Check if the "C1A04" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".</li> <li><u>s "C1A04" detected as the current malfunction?</u></li> <li>YES &gt;&gt; Refer to <u>DAS-249</u>, "<u>Diagnosis Procedure</u>".</li> <li>NO &gt;&gt; Inspection End.</li> <li>Diagnosis Procedure</li> <li><i>I</i>.CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) SELF-DIAGNOSIS RESULTS</li> <li>Check if any DTC is detected in "Self Diagnostic Result" of "ABS".</li> <li><u>Is any DTC detected?</u></li> <li>YES &gt;&gt; Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. Refer <u>BRC-44, "DTC Index"</u>.</li> <li>NO &gt;&gt; GO TO 2.</li> <li>CHECK ALL UNIT SELF-DIANOSIS RESULTS</li> <li>Check if any DTC is detected except for ITS control unit about VDC in "ALL DTC READING" with CONSU</li> </ol>	ROCEDURE	
<ul> <li>2. Perform "All DTC Reading" with CONSULT.</li> <li>3. Check if the "C1A04" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".</li> <li>Is "C1A04" detected as the current malfunction? YES &gt;&gt; Refer to DAS-249, "Diagnosis Procedure". NO &gt;&gt; Inspection End.</li> <li>Diagnosis Procedure</li> <li>I.CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) SELF-DIAGNOSIS RESULTS</li> <li>Check if any DTC is detected in "Self Diagnostic Result" of "ABS".</li> <li>Is any DTC detected?</li> <li>YES &gt;&gt; Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. Refer BRC-44, "DTC Index".</li> <li>NO &gt;&gt; GO TO 2.</li> <li>CHECK ALL UNIT SELF-DIANOSIS RESULTS</li> </ul>	RMATION PROCEDURE	
<ul> <li>1. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) SELF-DIAGNOSIS RESULTS</li> <li>Check if any DTC is detected in "Self Diagnostic Result" of "ABS".</li> <li><u>Is any DTC detected?</u></li> <li>YES &gt;&gt; Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. Reference and the second repair or replace the malfunction of the second s</li></ul>	s detected as the current malfunction in "Self Diagnostic Result" of <u>current malfunction?</u> 249, "Diagnosis Procedure".	"AVM".
Check if any DTC is detected in "Self Diagnostic Result" of "ABS". <u>Is any DTC detected?</u> YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. Refe <u>BRC-44, "DTC Index"</u> . NO >> GO TO 2. <b>2.</b> CHECK ALL UNIT SELF-DIANOSIS RESULTS Check if any DTC is detected except for ITS control unit about VDC in "ALL DTC READING" with CONSU		INFOID:00000000884187
<u>Is any DTC detected?</u> YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. Refe <u>BRC-44, "DTC Index"</u> . NO >> GO TO 2. <b>2.</b> CHECK ALL UNIT SELF-DIANOSIS RESULTS Check if any DTC is detected except for ITS control unit about VDC in "ALL DTC READING" with CONSU	R AND ELECTRIC UNIT (CONTROL UNIT) SELF-DIAGNOSIS RE	ESULTS
YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. Refe <u>BRC-44, "DTC Index"</u> . NO >> GO TO 2. <b>2.</b> CHECK ALL UNIT SELF-DIANOSIS RESULTS Check if any DTC is detected except for ITS control unit about VDC in "ALL DTC READING" with CONSU	ed in "Self Diagnostic Result" of "ABS".	
2.CHECK ALL UNIT SELF-DIANOSIS RESULTS Check if any DTC is detected except for ITS control unit about VDC in "ALL DTC READING" with CONSU	asis on the detected DTC and renair or replace the malfunctioning	g parts. Refer to
Check if any DTC is detected except for ITS control unit about VDC in "ALL DTC READING" with CONSU		
	Index".	
	Index". F-DIANOSIS RESULTS	with CONSULT.
YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-123</u> , " <u>Removal and Insta</u>	Index". F-DIANOSIS RESULTS	with CONSULT.
tion". NO >> Replace ITS control unit. Refer to <u>DAS-66, "Removal and Installation - ITS Control Unit"</u> .	Index". F-DIANOSIS RESULTS ed except for ITS control unit about VDC in "ALL DTC READING" v	

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# C1A39 STEERING ANGLE SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

# C1A39 STEERING ANGLE SENSOR

## DTC Logic

INFOID:000000008841882

INFOID:000000008841883

[BSW]

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
C1A39	STRG SEN CIR	ITS control unit receives the message that means "Steering angle sensor is failed" from steering angle sensor.	<ul><li>Steering angle sensor</li><li>ITS control unit</li></ul>

#### DTC CONFIRMATION PROCEDURE

# 1.PERFORM DTC CONFIRMATION PROCEDURE

#### 1. Turn ignition ON.

- 2. Perform "All DTC Reading" with CONSULT.
- 3. Check if the "C1A39" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".

#### Is "C1A39" detected as the current malfunction?

- YES >> Refer to DAS-249, "Diagnosis Procedure".
- NO >> Refer to <u>GI-47, "Intermittent Incident"</u>.

#### **Diagnosis** Procedure

1. CHECK STRG SENSOR SELF-DIAGNOSIS RESULTS

Check if any DTC is detected in "Self Diagnostic Result" of "ABS".

#### Is any DTC detected?

- YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. Refer to BRC-44, "DTC Index".
- NO >> GO TO 2.

**2.**CHECK ALL UNIT SELF-DIANOSIS RESULTS

Check if any DTC is detected except for ITS control unit about ABS in "ALL DTC READING" with CONSULT. <u>Is any DTC detected except for ITS?</u>

- YES >> Replace steering angle sensor. Refer to <u>BRC-127</u>, "Removal and Installation".
- NO >> Replace ITS control unit. Refer to DAS-66, "Removal and Installation ITS Control Unit".

#### **U0122 VDC P-RUN DIAG**

# < DTC/CIRCUIT DIAGNOSIS >

# U0122 VDC P-RUN DIAG

# DTC Logic

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INFOID:000000008841886

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U0122	VDC P-RUN DIAG	ITS control unit receives the incorrect signal about P-RUN from VDC via V-CAN communication	ABS actuator and electric unit (control unit)
DTC CONF	IRMATION PROCED	JRE	
1.PERFORM	M DTC CONFIRMATIO	N PROCEDURE	
1. Turn igni			
	"All DTC Reading" with the "U0122" is detected	CONSULT. I as the current malfunction in self-diag	nosis results of "AVM"
	etected as the current m	0	
	Refer to <u>DAS-252, "Diac</u>		
	Refer to <u>GI-47, "Intermit</u>	tent incident".	
Diagnosis	Procedure		INFOID:00000008841887
1. СНЕСК А	BS ACTUATOR AND E	LECTRIC UNIT (CONTROL UNIT) SE	LF-DIAGNOSIS RESULTS
•		f Diagnostic Result" of "ABS".	
Is any DTC c			
YES >> F NO >> (	GO TO 2.	e detected DTC and repair or replace the	ne maitunctioning parts.
2.снеск п	IS CONTROL UNIT SE	LF-DIAGNOSIS RESULTS	
		f Diagnostic Result" of "ABS".	
<u>Is any DTC c</u>	letected?		
NO >> F		e detected DTC and repair or replace the or and electric unit (control unit). Refer	

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#### **U0416 VDC CHECKSUM DIAG**

#### < DTC/CIRCUIT DIAGNOSIS >

### U0416 VDC CHECKSUM DIAG

#### DTC Logic

INFOID:000000008841890

[BSW]

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U0416	VDC CHECKSUM DIAG	ITS control unit receives the incorrect signal about P-RUN from VDC via V-CAN communication	ABS actuator and electric unit (control unit)

#### DTC CONFIRMATION PROCEDURE

# 1.PERFORM DTC CONFIRMATION PROCEDURE

#### 1. Turn ignition ON.

- 2. Perform "All DTC Reading" with CONSULT.
- 3. Check if the "U0416" is detected as the current malfunction in self-diagnosis results of "AVM".

#### Is "U0416" detected as the current malfunction?

- YES >> Refer to DAS-252, "Diagnosis Procedure".
- NO >> Refer to <u>GI-47, "Intermittent Incident"</u>.

#### **Diagnosis** Procedure

INFOID:000000008841891

# 1. CHECK VDC UNIT SELF-DIAGNOSIS RESULTS

Check if any DTC is detected in "Self Diagnostic Result" of "ABS".

#### Is any DTC detected?

YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.

NO >> GO TO 2.

# 2. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) SELF-DIAGNOSIS RESULTS

Check if any DTC is detected in "Self Diagnostic Result" of "ABS".

#### Is any DTC detected?

- YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.
- NO >> Replace the ABS actuator and electric unit (control unit). Refer to <u>BRC-123</u>, "<u>Removal and Instal-</u> lation".

#### **U0428 STEERING ANGLE SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

# **U0428 STEERING ANGLE SENSOR**

# DTC Logic

DTC	Display contents of CONSULT	DTC detection condition	Possible malfunction factor
U0428	ST ANGLE SENSOR CALIBRATION [U0428]	The neutral position adjustment of the steering angle sensor is incomplete.	Adjust neutral position of the steering angle sensor.
Diagno	osis Procedure		INFOID:00000008841894
		POSITION OF THE STEERING ANGLE SENSC	
When U	1232 is detected, adj	ust the neutral position of the steering angle sen	sor.
	>> Perform adjustme SULT Function (A	ent of the neutral position of the steering angle s	sensor. Refer to <u>BRC-33, "CON-</u>

INFOID:000000008841893

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#### < DTC/CIRCUIT DIAGNOSIS >

#### U1000 CAN COMM CIRCUIT

#### Description

#### CAN COMMUNICATION

CAN (Controller Area Network) is a serial communication line for real time applications. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Modern vehicle is equipped with many electronic control units, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN-H, CAN-L) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads the required data only. CAN communication signal chart. Refer to <u>LAN-32</u>, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart".

#### 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.

#### DTC Logic

INFOID:000000008841896

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U1000	CAN COMM CIRCUIT	If ITS control unit is not transmitting or receiving CAN communication signal or ITS communica- tion signal for 2 seconds or more	<ul><li>CAN communication system</li><li>ITS communication system</li></ul>

#### NOTE:

-

If "U1000" is detected, first diagnose the CAN communication system.

#### **Diagnosis** Procedure

INFOID:000000008841897

# **1.**PERFORM THE SELF-DIAGNOSIS

- 1. Turn the ignition switch ON.
- 2. Turn the MAIN switch of ITS system ON, and then wait for 30 seconds or more.
- 3. Perform "All DTC Reading" with CONSULT.
- 4. Check if the "U1000" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".

#### Is "U1000" detected as the current malfunction?

- YES >> Refer to <u>DAS-46</u>, "Description".
- NO >> Refer to GI-47, "Intermittent Incident".

INFOID:00000008841895

#### **U1010 CONTROL UNIT (CAN)**

#### < DTC/CIRCUIT DIAGNOSIS >

# U1010 CONTROL UNIT (CAN)

#### Description

CAN controller controls the communication of CAN communication signal and ITS communication signal, and В the error detection.

#### DTC Logic

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes	D
U1010	CONTROL UNIT (CAN)	If ITS control unit detects malfunction by CAN controller initial diagnosis	ITS control unit	
				E

#### **Diagnosis** Procedure

# 1.PERFORM DTC CONFIRMATION PROCEDURE

Turn the MAIN switch of ITS system ON. 1.

Perform "All DTC Reading" with CONSULT. 2.

Check if the "U1010" is detected as the current malfunction in "Self Diagnostic Result" of "AVM". 3.

#### Is "U1010" detected as the current malfunction?

YES >> Replace the ITS control unit. Refer to DAS-66, "Removal and Installation - ITS Control Unit".

NO >> Inspection End.

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#### **U111A REAR CAMERA IMAGE SIGNAL CIRCUIT**

< DTC/CIRCUIT DIAGNOSIS >

# U111A REAR CAMERA IMAGE SIGNAL CIRCUIT

#### DTC Logic

INFOID:000000008841902

[BSW]

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U111A	REAR CAMERA IM- AGE SIGNAL	Rear camera image signal circuit is open or shorted	Check rear camera image signal circuit between rear camera and around view monitor control unit.

#### **Diagnosis** Procedure

INFOID:000000008841903

Regarding Wiring Diagram information, refer to <u>DAS-22, "Wiring Diagram"</u>.

# 1. CHECK CONTINUITY REAR CAMERA POWER SUPPLY AND GROUND CIRCUIT

- 1. Turn the ignition switch OFF.
- 2. Disconnect the ITS control unit connector and rear camera connector.
- 3. Check for continuity between ITS control unit harness connector and rear camera harness connector.

ITS cor	ntrol unit	Rear C	Camera	Continuity
Connector	Terminal	Connector	Terminal	Continuity
M59	51	B35	7	Yes
	52	555	8	163

4. Check for continuity between ITS control unit harness connector and ground.

ITS cor	ntrol unit		Continuity
Connector	Terminal	Ground	Continuity
M59	52		No

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the harness or connector.

# 2. CHECK VOLTAGE REAR CAMERA POWER SUPPLY

1. Connect the ITS control unit connector and rear camera connector.

2. Turn the ignition switch ON.

3. Check voltage between ITS control unit harness connector and ground.

	Terminal					
	(+)				Condition	Voltage (Approx.)
	ntrol unit	(-)		(Approx.)		
Connector	Terminal					
M59	52	Ground	"CAMERA" switch is ON or shift selector is in R (Reverse)	6.2 V		

Is inspection result normal?

YES >> GO TO 3.

NO >> Replace ITS control unit. Refer to DAS-66, "Removal and Installation - ITS Control Unit".

# U111A REAR CAMERA IMAGE SIGNAL CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

[BSW]

ITS	control unit		Rear View	Camera	0			
Connector	Terr	ninal C	onnector	Terminal	Continuity	1		
M59	5	60	B35	1	Yes			
10129	6	6	<b>Б</b> ЭЭ –	5	Tes			
Check for	r continuity	between IT	S control	unit harness	s connector	and ground		
170								
Connector	control unit	ninal		Continuity				
Connector			Ground -					
M59		6		No				
ES >> G O >> R CHECK R Connect Turn the	EAR CAME the ITS cor ignition swi	ess or conn ERA IMAGE ntrol unit con tch ON.	SIGNAL	nd rear came ween ITS co			ector termi	nals.
ES >> G IO >> R .CHECK R Connect Turn the	GO TO 4. Repair harne EAR CAME the ITS cor ignition swi oscilloscop	ess or conn ERA IMAGE ntrol unit con tch ON.	SIGNAL	nd rear came			ector term	nals.
ES >> G O >> R CHECK R Connect Turn the	GO TO 4. Repair harne EAR CAME the ITS cor ignition swi oscilloscop Terr	ess or conn ERA IMAGE ntrol unit con tch ON. be, check vo	SIGNAL	nd rear came ween ITS co	ntrol unit h			nals.
ES >> G IO >> R CHECK R Connect Turn the Using an	GO TO 4. Repair harne EAR CAME the ITS cor ignition swi oscilloscop Terr	ess or conn ERA IMAGE ntrol unit con tch ON. be, check vo	SIGNAL	nd rear came	ntrol unit h	arness conn	ge	nals.
YES >> G NO >> R CHECK R Connect Turn the Using an	GO TO 4. Repair harne EAR CAME the ITS cor ignition swi oscilloscop Terr	ess or conn ERA IMAGE ntrol unit con tch ON. be, check vo	SIGNAL	nd rear came ween ITS co	ntrol unit h	arness conn	ge	nals.

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#### **U1232 STEERING ANGLE SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

# U1232 STEERING ANGLE SENSOR

#### **DTC Logic**

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[BSW]

DTC	Display contents of CONSULT	DTC detection condition	Possible malfunction factor
U1232	ST ANGLE SEN CALIB	The neutral position registration of the steering angle sensor cannot finish.	<ul><li>Steering angle sensor</li><li>ITS control unit</li></ul>

#### **Diagnosis** Procedure

INFOID:000000008841906

**1**. REGISTER THE NEUTRAL POSITION OF THE STEERING ANGLE SENSOR

- 1. Turn the ignition switch ON.
- Perform registration of the neutral position of the steering angle sensor. Refer to <u>DAS-224</u>, "CONSULT <u>Function (AVM)</u>".
- 3. Check "Self Diagnostic Result" of "AVM" with CONSULT. Refer to <u>DAS-224, "CONSULT Function (AVM)"</u>. <u>Is "ST ANGLE SEN CALIB" detected?</u>

YES >> GO TO 2.

NO >> Inspection End.

2. CHECK STEERING ANGLE SENSOR

#### Check steering angle sensor.

Is the inspection result normal?

- YES >> Replace ITS control unit. Refer to DAS-66, "Removal and Installation ITS Control Unit".
- NO >> Repair or replace malfunctioning parts.

#### **U1305 CAMERA IMAGE CALIB**

DTC detecting condition

ITS control unit configuration is incomplete

#### < DTC/CIRCUIT DIAGNOSIS >

**U1305 CAMERA IMAGE CALIB** 

Trouble diagnosis name

CAMERA CONFIG

#### **DTC Logic**

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[BSW]

INFOID:000000008841907

INFOID:000000008841908

Possible causes

Perform ITS configuration with CONSULT

# 1. CHECK SELF-DIAGNOSIS RESULTS Check if "U1305" is current in "Self Diagnostic Result" of "AVM". Is "U1305" detected? >> Perform ITS configuration using CONSULT. Refer to DAS-224, "CONSULT Function (AVM)". If problem persists, repair or replace the malfunctioning part. >> Refer to GI-47, "Intermittent Incident".

#### DTC DETECTION LOGIC

**Diagnosis** Procedure

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#### **U1308 CAMERA CONFIG**

#### < DTC/CIRCUIT DIAGNOSIS >

# U1308 CAMERA CONFIG

#### DTC Logic

INFOID:000000008841909

[BSW]

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U1308	ITS CALIB [U1308]	ITS control unit calibration is incomplete	Perform ITS calibration with CONSULT

#### **Diagnosis** Procedure

INFOID:000000008841910

# 1. CHECK SELF-DIAGNOSIS RESULTS

Check if "U1308" is current in "Self Diagnostic Result" of "AVM".

#### Is "U1308" detected?

- YES >> Perform ITS calibration of camera image using CONSULT. Refer to <u>DAS-224</u>, "<u>CONSULT Func-</u> <u>tion (AVM)</u>".
- NO >> Refer to <u>GI-47</u>, "Intermittent Incident".

#### **U1309 PUMP UNIT CURRENT**

#### < DTC/CIRCUIT DIAGNOSIS >

DTC DETECTION LOGIC

# U1309 PUMP UNIT CURRENT

# DTC Logic

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INFOID:000000008841913

[BSW]

DTC	Trouble dia	gnosis name	DTC de	etecting condition	Possible causes
U1309	PUMP UNI	T CURRENT	ITS control unit de from pump control	etects the value of current unit is incorrect	<ul> <li>Rear view camera washer control unit</li> <li>Harness</li> <li>ITS control unit</li> </ul>
TC CONF	IRMATION	PROCED	URE		
			N PROCEDURE	=	
	ition switch (				
Perform	"All DTC Re	ading" with			
				malfunction in "Self Dia	agnostic Result" of "AVM".
	etected as the Refer to DAS		anosis Procedur	·e"	
	Inspection E			<u>.</u> .	
iagnosis	Procedur	e			INFOID:0000000884191
- <u> </u>					
	//// D'				
egarding W	viring Diagra	m informati	on, refer to <u>DAS</u>	S-22, "Wiring Diagram"	
1					
.CHECK F	REAR VIEW	CAMERA A	AIR PUMP MOT	OR POWER SUPPLY	CIRCUIT
			a washer contro	I unit connector.	
. —					
	ignition swit		w camera wash	er control unit connect	or and ground.
			w camera wash	er control unit connect	or and ground.
			w camera wash	er control unit connect	or and ground.
	oltage betwe		-		or and ground.
3. Check v	Oltage betwe Terminal +) mera washer		w camera wash	er control unit connect Voltage (Approx.)	or and ground.
3. Check v († Rear view ca contro	oltage betwe Terminal ⊦) mera washer ol unit	en rear vie	-	Voltage	or and ground.
3. Check v (+ Rear view ca contro Connector	Oltage betwe Terminal +) mera washer ol unit Terminal	een rear vie	Condition	Voltage (Approx.)	or and ground.
3. Check v (+ Rear view ca contro Connector B16	oltage betwe Terminal +) mera washer ol unit Terminal 12	en rear vie (-) Ground	-	Voltage	or and ground.
3. Check v (+ Rear view ca contro Connector B16 s inspection	Oltage betwe Terminal +) mera washer ol unit Terminal	en rear vie (-) Ground	Condition	Voltage (Approx.)	or and ground.
3. Check v (+ Rear view ca contro Connector B16 s inspection YES >> 0	oltage betwe Terminal +) mera washer ol unit Terminal 12 result norma	een rear vie (-) Ground al?	Condition Ignition ON	Voltage (Approx.)	or and ground.
3. Check v (+ Rear view ca contro Connector B16 s inspection YES >> ( NO >> )	oltage betwee Terminal +) mera washer ol unit Terminal 12 result norma GO TO 2. Repair the ha	en rear vie (-) Ground al? arness or co	Condition Ignition ON	Voltage (Approx.)	
<ul> <li>Check v</li> <li>Check v</li> <li>(1)</li> <li>Rear view ca contro</li> <li>Connector</li> <li>B16</li> <li>Sinspection</li> <li>YES &gt;&gt; 0</li> <li>NO &gt;&gt; 1</li> <li>CHECK F</li> <li>Turn the</li> </ul>	oltage betwee Terminal +) mera washer ol unit Terminal 12 result norma GO TO 2. Repair the ha REAR VIEW • ignition swit	en rear vie (-) <u>Ground</u> al? arness or ca CAMERA A cch OFF.	Condition Ignition ON Onnector.	Voltage (Approx.) 12 V OR GROUND CIRCU	T
8. Check v (1 Rear view ca contro Connector B16 S inspection YES >>0 NO >>1 2.CHECK F 1. Turn the	oltage betwee Terminal +) mera washer ol unit Terminal 12 result norma GO TO 2. Repair the ha REAR VIEW • ignition swit	en rear vie (-) <u>Ground</u> al? arness or ca CAMERA A cch OFF.	Condition Ignition ON Onnector.	Voltage (Approx.) 12 V	T
3. Check v (1 Rear view ca contro Connector B16 S inspection YES >> 0 NO >> 1 2. CHECK F 1. Turn the 2. Check for	Terminal Terminal Terminal Terminal 12 Tesult norma GO TO 2. Repair the ha REAR VIEW ignition swit pr continuity	een rear vie (–) Ground al? arness or ca CAMERA A ch OFF. between re	Condition Ignition ON Onnector.	Voltage (Approx.) 12 V OR GROUND CIRCU	T
3. Check v (+ Rear view ca contro Connector B16 S inspection YES >> 0 NO >> 1 2. CHECK F 1. Turn the 2. Check for Rear view can	oltage betwee Terminal Terminal mera washer ol unit Terminal 12 result norma GO TO 2. Repair the ha REAR VIEW ignition swit or continuity mera washer con	een rear vie (-) Ground al? CAMERA A CAMERA A cch OFF. between re	Condition Ignition ON Onnector. AIR PUMP MOT ar view camera	Voltage (Approx.) 12 V OR GROUND CIRCU	T
Check v     (-         Rear view ca         contro         Connector         B16         Sinspection         YES >> 0         NO >> 1         CHECK F         Check for         Rear view can         Connector         Rear view can         Connector	Terminal         Terminal         +)         mera washer         ol unit         Terminal         12         result norma         GO TO 2.         Repair the ha         REAR VIEW         ignition switt         precontinuity         nera washer continuity	een rear vie (-) Ground al? arness or co CAMERA A ch OFF. between re ntrol unit inal	Condition Ignition ON Onnector. AIR PUMP MOT ar view camera Ground	Voltage (Approx.) 12 V OR GROUND CIRCUI washer control unit co	T
3. Check v (+ Rear view ca contro Connector B16 S inspection YES >> 0 NO >> 1 2.CHECK F 1. Turn the 2. Check for Rear view can Connector B16	Terminal         Terminal         mera washer         ol unit         Terminal         12         result norma         GO TO 2.         Repair the has         REAR VIEW         ignition switter         or continuity         nera washer continuity         nera washer continuity         12         13         14         15         16         17         18         19         10         10         10         11         12         12         12         13         14         15         15         16         17         18         19         10         10         10         11         12         13         14         15	een rear vie (-) Ground al? CAMERA A CAMERA A cch OFF. between re ntrol unit inal	Condition Ignition ON Onnector. AIR PUMP MOT ar view camera Ground	Voltage (Approx.) 12 V OR GROUND CIRCUI washer control unit co	T
3. Check v (+ Rear view ca contro Connector B16 S inspection YES >> 0 NO >> 1 2.CHECK F 1. Turn the 2. Check for Rear view can Connector B16 S the inspection	Terminal         Terminal         +)         mera washer         ol unit         Terminal         12         result norma         GO TO 2.         Repair the ha         REAR VIEW         ignition swit         or continuity         nera washer continuity	een rear vie (-) Ground al? CAMERA A CAMERA A cch OFF. between re ntrol unit inal	Condition Ignition ON Onnector. AIR PUMP MOT ar view camera Ground	Voltage (Approx.) 12 V OR GROUND CIRCUI washer control unit co	T
3. Check v (1 Rear view ca contro Connector B16 S inspection YES >> 0 NO >> 1 2. CHECK F 1. Turn the 2. Check for Rear view can Connector B16 S the inspection YES >> 0	Terminal         Terminal         mera washer         ol unit         Terminal         12         result norma         GO TO 2.         Repair the has         REAR VIEW         ignition switter         or continuity         nera washer continuity         nera washer continuity         12         13         14         15         16         17         18         19         10         10         10         11         12         12         12         13         14         15         15         16         17         18         19         10         10         10         11         12         13         14         15	een rear vie (–) Ground al? arness or ca CAMERA A ch OFF. between re ntrol unit inal cormal?	Condition Ignition ON Ignition ON Onnector. AIR PUMP MOT ar view camera Ground Cor	Voltage (Approx.) 12 V OR GROUND CIRCUI washer control unit co	T

1. Disconnect the ITS control unit connector.

#### **DAS-191**

#### **U1309 PUMP UNIT CURRENT**

#### < DTC/CIRCUIT DIAGNOSIS >

2. Check for continuity between ITS control unit harness connector and rear view camera washer control unit connector.

ITS cor	ntrol unit	Rear view camera washer control unit		Continuity
Connector	Connector Terminal		Terminal	
M58	2	B16	7	Yes
00101	3		8	

3. Check for continuity between ITS control unit harness connector and ground.

ITS co	ntrol unit		Continuity	
Connector	Terminal	Ground	Continuity	
M58	2	Giouna	No	
WIGO	3		NO	

Is inspection result normal?

YES >> GO TO 4.

NO >> Repair the harness or connector.

#### **4.**CHECK CONTINUITY REAR VIEW CAMERA WASHER CONTROL UNIT TO PUMP

1. Disconnect rear view camera air pump connector.

2. Check for continuity between rear view camera washer control unit connector and pump connector.

Rear view camera	washer control unit	Rear view camera air pump motor		Continuity
Connector	Connector Terminal		Terminal	
B16	1	B17	1	Yes
	2		2	163

3. Check for continuity between rear view camera washer control unit connector and ground.

Rear view camera	washer control unit		Continuity
Connector	Terminal	Ground	Continuity
B16	1	Ground	No
ВІб	2		NO

Is inspection result normal?

YES >> GO TO 5.

NO >> Repair the harness or connector.

**5.**CHECK REAR VIEW CAMERA AIR PUMP MOTOR ITS CONTROL UNIT SUPPLY CIRCUIT

Momentarily connect a jumper from a fused battery positive to terminal 1 and from ground to terminal 2 of the rear view camera air pump motor.

Does the pump operate?

YES >> GO TO 6.

NO >> Replace the rear view camera air pump motor.

 ${f 6}.$ CHECK REAR VIEW CAMERA AIR PUMP MOTOR ITS CONTROL UNIT SUPPLY CIRCUIT

- 1. Reconnect the ITS control unit connector.
- 2. Turn the ignition switch ON.
- 3. Using CONSULT, activate the rear view camera air pump while checking voltage between rear view camera washer control unit connector and ground.

#### **U1309 PUMP UNIT CURRENT**

#### < DTC/CIRCUIT DIAGNOSIS >

	Terminal			
(	(+)			Voltage (Approx.)
	Rear view camera washer control unit		Condition	
Connector	Terminals			
B16	7, 8	Ground	Activating pump	5 V

Can voltage be measured on either terminal?

YES >> Replace rear view camera washer control unit.

NO >> Replace the ITS control unit. Refer to DAS-66, "Removal and Installation - ITS Control Unit".

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#### U130B REAR CAMERA COMM ERROR

#### < DTC/CIRCUIT DIAGNOSIS >

# U130B REAR CAMERA COMM ERROR

#### DTC Logic

INFOID:000000008841917

[BSW]

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U130B	REAR CAMERA COMM ERROR	ITS control unit receives the incorrect commu- nication signal from rear view camera.	<ul><li>Rear view camera</li><li>Harness</li><li>ITS control unit</li></ul>

#### DTC CONFIRMATION PROCEDURE

# 1.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- 2. Perform "All DTC Reading" with CONSULT.
- 3. Check if the "U130B" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".
- Is "U130B" detected as the current malfunction?
- YES >> Refer to DAS-266, "Diagnosis Procedure".
- NO >> Inspection End.

#### **Diagnosis** Procedure

INFOID:00000008841918

Regarding Wiring Diagram information, refer to DAS-22, "Wiring Diagram".

#### 1.CONNECTOR CHECK

Check the ITS control unit and rear view camera connectors for the following:

- Proper connection
- Damage

Disconnected or loose terminals

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

# 2. CHECK REAR VIEW CAMERA VOLTAGE

- 1. Connect ITS control unit and rear view camera harness connectors.
- 2. Check voltage between ITS control unit connector M59 and ground.

	Terminal			
(+) ITS control unit Connector Terminal		(-)	Condition	Voltage (Approx.)
		(-)		
M59	M59 68		Ignition ON	5 V

Is the inspection result normal?

YES >> Replace the ITS control unit. Refer to DAS-66, "Removal and Installation - ITS Control Unit".

NO >> Replace rear view camera. Refer to DAS-139. "Removal and Installation".

#### **U1310 PUMP UNIT CIRCUIT**

#### < DTC/CIRCUIT DIAGNOSIS >

DTC DETECTION LOGIC

# U1310 PUMP UNIT CIRCUIT

# DTC Logic

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INFOID:000000008841923

[BSW]

DTC	Trouble dia	agnosis name		DTC d	letecting condition	Possible causes
U1310	PUMP UN	IT CIRCUIT			etects the value of voltage I unit is incorrect	<ul> <li>Rear view camera washer control unit</li> <li>Harness</li> <li>ITS control unit</li> </ul>
OTC CONF	IRMATION	PROCED	URE			
1.PERFORI		FIRMATIO	N PROCE	DUR	E	
	tion switch			_		
	"All DTC Re the "U1310				malfunction in "Self Dia	agnostic Result" of "AVM".
<u>s "U1310" de</u>						5
	Refer to <u>DA</u> nspection E		gnosis Pro	ocedu	<u>re"</u> .	
	•					
Diagnosis	FIOCEUU	le				INFOID:00000008841924
Regarding W	viring Diagra	am informat	ion, refer t	o <u>DAS</u>	S-22, "Wiring Diagram"	
1						
					OR POWER SUPPLY	CIRCUIT
	ect the rear ignition swi		a washer	contro	ol unit connector.	
			w camera	wash	er control unit connect	or and ground.
	<b>T</b>					
(+	Terminal		_			
Rear view car			Condit	tion	Voltage (Approx.)	
contro	ol unit	(-)				
Connector	Terminal				<b>.</b>	
B16	12	Ground	Ignition	ON	Battery voltage	
<u>ls inspection</u> YES >> (	<u>result norm</u> 30 TO 2.	<u>ai (</u>				
NO >> F	Repair the h					
<b>2.</b> CHECK R	EAR VIEW	CAMERA	AIR PUMP	P MOT	OR GROUND CIRCU	Т
	ignition swi		<b></b>		weeken eester Last	analysis and successful
2. Check fo	or continuity	between re	ear view ca	imera	washer control unit co	nnector and ground.
Rear view carr	era washer co	ontrol unit				
Connector	Terr	ninal	Ground	Co	ntinuity	
B16	:	5			Yes	
Is the inspec	tion result n	ormal?	<b>I</b>			
-						
	GO TO 3. Repair the h	arnoss or a	onnoctor			

 ${f 3}.$  CHECK CONTINUITY ITS CONTROL UNIT TO REAR VIEW CAMERA WASHER CONTROL UNIT

1. Disconnect the ITS control unit connector.

#### DAS-195

#### **U1310 PUMP UNIT CIRCUIT**

#### < DTC/CIRCUIT DIAGNOSIS >

2. Check for continuity between ITS control unit harness connector and rear view camera washer control unit connector.

ITS cor	ntrol unit	Rear view camera washer control unit		Continuity
Connector	Connector Terminal		Terminal	
M58	2	B16	7	Yes
00101	3		8	

3. Check for continuity between ITS control unit harness connector and ground.

ITS coi	ntrol unit		Continuity
Connector	Terminal	Ground	Continuity
M58	2	Ground	No
WIGO	3		NO

Is inspection result normal?

YES >> GO TO 4.

NO >> Repair the harness or connector.

#### **4.**CHECK CONTINUITY REAR VIEW CAMERA WASHER CONTROL UNIT TO PUMP

1. Disconnect rear view camera air pump connector.

2. Check for continuity between rear view camera washer control unit connector and pump connector.

Rear view camera	washer control unit	Rear view camera air pump motor		Continuity
Connector	Connector Terminal		Terminal	
B16	1	B17	1	Yes
	2		2	163

3. Check for continuity between rear view camera washer control unit connector and ground.

Rear view camera	washer control unit		Continuity
Connector	Connector Terminal		Continuity
B16	1	Ground	No
ВТО	2		NO

Is inspection result normal?

YES >> GO TO 5.

NO >> Repair the harness or connector.

**5.**CHECK REAR VIEW CAMERA AIR PUMP MOTOR ITS CONTROL UNIT SUPPLY CIRCUIT

Momentarily connect a jumper from a fused battery positive to terminal 1 and from ground to terminal 2 of the rear view camera air pump motor.

Does the pump operate?

YES >> GO TO 6.

NO >> Replace the rear view camera air pump motor.

 ${f 6}.$ CHECK REAR VIEW CAMERA AIR PUMP MOTOR ITS CONTROL UNIT SUPPLY CIRCUIT

- 1. Reconnect the ITS control unit connector.
- 2. Turn the ignition switch ON.
- 3. Activate the rear view camera air pump while checking voltage between rear view camera washer control unit connector and ground.

#### **U1310 PUMP UNIT CIRCUIT**

#### < DTC/CIRCUIT DIAGNOSIS >

	Terminal			
(	(+)			Voltage
	Rear view camera washer control unit		Condition	(Approx.)
Connector	Connector Terminals			
B16	7, 8	Ground	Activating pump	5 V

Can voltage be measured on either terminal?

YES >> Replace rear view camera washer control unit.

NO >> Replace the ITS control unit. Refer to DAS-66, "Removal and Installation - ITS Control Unit".

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#### < DTC/CIRCUIT DIAGNOSIS >

# POWER SUPPLY AND GROUND CIRCUIT

#### Diagnosis Procedure

Regarding Wiring Diagram information, refer to DAS-22, "Wiring Diagram".

# 1. CHECK ITS CONTROL UNIT POWER SUPPLY CIRCUIT

Check voltage between ITS control unit harness connector and ground.

	Terminal	Condition		
(	(+) (–)			Voltage
ITS cor	ntrol unit		Ignition	(Approx.)
Connector	Terminal		switch	
	20	Ground	OFF	Battery voltage
M58	20	Ground	ON	Battery voltage
WIJO	39		OFF	0 V
	39		ON	Battery voltage

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the ITS control unit power supply circuit.

2. CHECK ITS CONTROL UNIT GROUND CIRCUIT

1. Turn the ignition switch OFF.

2. Disconnect the ITS control unit connector.

3. Check for continuity between ITS control unit harness connector and ground.

ITS cor	ntrol unit		Continuity
Connector	Terminal	Ground	Continuity
M58	40		Yes

Is the inspection result normal?

YES >> Inspection End.

NO >> Repair the ITS control unit ground circuit.

INFOID:000000008841928

		WARN	ING SYS	STEMS S	WITCH CIRCUIT	
< DTC/CIRC		NOSIS >			[BSW]	
WARNIN	IG SYST	EMS SV	VITCH C	CIRCUIT		
Compone	ent Functio	on Check			INFOID:000000008932653	A
1.снеск \						D
				UT SIGNAL		В
	e ignition swi he DATA MC		"ITS SW 1	" of "AVM" w	vith CONSULT.	
					nonitor status.	С
Monitor item		Condition		Monitor status	_	
		tems switch is	nressed	On	_	D
ITS SW 1		stems switch is		OFF	_	
Is the inspec	• •		not pressed	011	-	_
-		stems switch	circuit is no	ormal.		E
		S-199, "Diac				
Diagnosis	Procedu	re			INFQID:000000008932654	F
0						
			<b>.</b> .			
Regarding V	Viring Diagra	am informatio	on, refer to	<u>DAS-22, "W</u>	<u>ring Diagram"</u> .	G
1.CHECK	WARNING S	SYSTEMS S	NITCH SIG	NAL INPUT		Н
1. Turn the	e ignition swi	tch ON.				
2. Check v	oltage betwo	een ITS con	trol unit har	ness connec	tor and ground.	
					_	
	Terminals		Condition			
	+)	(-)		Voltage		J
ITS cor	ntrol unit	-	Warning systems	(Approx.)		
Connector	Terminal	Ground	switch			
M58	32		Pressed	0 V	_	Κ
IVIJO	52		Released	12 V		
Is the inspec	ction result n	ormal?			—	L
		ITS control	unit. Refer	to <u>DAS-66, '</u>	Removal and Installation - ITS Control Unit".	
•	GO TO 2.					
2.CHECK \	NARNING S	SYSTEMS S	WITCH			Μ
	nition switch					
		stems switch		S-200 "Cor	nponent Inspection".	Ν
Is the inspec	•••					1.4
	GO TO 3.					
NO >>	Replace the				AS-138, "Removal and Installation".	DA
3.CHECK \	WARNING S	SYSTEMS S	WITCH GR	OUND CIRC	UIT	
					onnector terminal and ground.	P
	,	5 -	,		Ŭ	Ρ
Warning	g system switcl	h		Continuity	-	

Warning sy	stem switch		Continuity
Connector	Connector Terminal		Continuity
M62	8		Yes
1. 0		2	

Is the inspection result normal?

YES >> GO TO 4.

# WARNING SYSTEMS SWITCH CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

NO >> Repair harness or connector.

#### **4.**CHECK WARNING SYSTEMS SWITCH SIGNAL INPUT CIRCUIT FOR OPEN

- 1. Disconnect the ITS control unit connector.
- Check continuity between the ITS control unit harness connector and warning system switch harness connector.

ITS cor	ntrol unit	Warning sy	stem switch	Continuity
Connector	Terminal	Connector	Terminal	Continuity
M58	32	M62	6	Yes

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair the harnesses or connectors.

5. CHECK WARNING SYSTEMS SWITCH SIGNAL INPUT CIRCUIT FOR SHORT

Check continuity between the ITS control unit harness connector and ground.

ITS cor	ntrol unit		Continuity
Connector	Terminal	Ground	Continuity
M58	32	*	No

Is the inspection result normal?

YES >> Replace the ITS control unit. Refer to DAS-66, "Removal and Installation - ITS Control Unit".

NO >> Repair the harnesses or connectors.

#### Component Inspection

INFOID:000000008932655

#### 1. CHECK WARNING SYSTEMS SWITCH

Check continuity of warning systems switch.

Terr	ninal	Condition	Continuity
6	8	When warning systems switch is pressed	Yes
0	0	When warning systems switch is released	No

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace the warning systems switch. Refer to DAS-138, "Removal and Installation".

	WARNI	NG SYSTEM	AS ON IN	DICATOR CIF	RCUIT	
< DTC/CIRCUIT DI	AGNOSIS >					[BSW]
WARNING SY	STEMS	ON INDICA	ATOR CIF	RCUIT		
Component Fur	ction Che	eck				INFOID:000000008932656
1.CHECK WARNIN	GSYSTEM		)B			
·						
	e test item "B			M" with CONSUL	T.	
On : Warn	ing system	s ON indicator	illuminates			
		s ON indicator		F		
Is the inspection res	ult normal?					
YES >> Inspecti						
		Diagnosis Proce	<u>aure"</u> .			
Diagnosis Proce	dure					INFOID:000000008932657
Regarding Wiring Di	agram inforn	nation, refer to <b>[</b>	DAS-22, "Wir	ing Diagram".		
4		CATOR POWER	SUPPLY CI	RCUIT		
1.CHECK WARNIN						
1. CHECK WARNIN 1. Turn ignition sw						
<ol> <li>Turn ignition sw</li> <li>Disconnect warr</li> </ol>	tch OFF. hing system	switch connecto	r.			
<ol> <li>Turn ignition sw</li> <li>Disconnect warn</li> <li>Turn ignition sw</li> </ol>	tch OFF. hing system tch ON.			connector and gro	und.	
<ol> <li>Turn ignition sw</li> <li>Disconnect warn</li> <li>Turn ignition sw</li> </ol>	tch OFF. hing system tch ON.			connector and gro	und.	
<ol> <li>Turn ignition sw</li> <li>Disconnect warn</li> <li>Turn ignition sw</li> <li>Check voltage b</li> </ol>	tch OFF. hing system tch ON.	ning system swit		connector and gro	und.	
<ol> <li>Turn ignition sw</li> <li>Disconnect warn</li> <li>Turn ignition sw</li> <li>Check voltage b</li> </ol>	tch OFF. hing system tch ON. etween warr erminals		tch harness of Voltage	connector and gro	und.	
<ol> <li>Turn ignition sw</li> <li>Disconnect warn</li> <li>Turn ignition sw</li> <li>Check voltage b</li> <li>T</li> <li>(+)</li> <li>Warning system s</li> </ol>	tch OFF. hing system tch ON. etween warr erminals	ning system swit	ch harness o	connector and gro	und.	
<ol> <li>Turn ignition sw</li> <li>Disconnect warn</li> <li>Turn ignition sw</li> <li>Check voltage b</li> <li>Check voltage b</li> <li>(+)</li> <li>Warning system s</li> <li>Connector</li> </ol>	tch OFF. hing system tch ON. etween warr erminals switch ferminal	ning system swit	Voltage (Approx.)	connector and gro	und.	
1.       Turn ignition sw         2.       Disconnect warn         3.       Turn ignition sw         4.       Check voltage b         T         (+)       Warning systems         Connector       Connector         M62       M62	tch OFF. hing system s tch ON. etween warr erminals switch ferminal 5	ning system swit	tch harness of Voltage	connector and gro	und.	
1.       Turn ignition sw         2.       Disconnect warr         3.       Turn ignition sw         4.       Check voltage b	tch OFF. hing system tch ON. etween warr erminals switch ferminal 5 ult normal?	ning system swit	Voltage (Approx.)	connector and gro	und.	
1. Turn ignition sw         2. Disconnect warr         3. Turn ignition sw         4. Check voltage b         (+)         Warning system s         Connector         M62         Is the inspection res         YES       >> GO TO	tch OFF. hing system s tch ON. etween warr erminals switch ferminal 5 ult normal? 2.	ning system swit	Voltage (Approx.) Battery voltage	- - -	und.	
1. Turn ignition sw         2. Disconnect warr         3. Turn ignition sw         4. Check voltage b         (+)         Warning system s         Connector         M62         Is the inspection res         YES       >> GO TO	tch OFF. hing system s tch ON. etween warr erminals switch ferminal 5 ult normal? 2. he warning s	ning system swit	Voltage (Approx.) Battery voltage	supply circuit.	und.	
1. Turn ignition sw         2. Disconnect warr         3. Turn ignition sw         4. Check voltage b         (+)         Warning system s         (+)         Warning system s         Connector         M62         Is the inspection res         YES       >> GO TO         NO       >> Repair t         2.CHECK WARNIN         1. Turn ignition sw	tch OFF. hing system s tch ON. etween warr erminals switch ferminal 5 ult normal? 2. he warning s G SYSTEM tch OFF.	(-) Ground E Systems ON india	Voltage (Approx.) Battery voltage cator power =	supply circuit.	und.	
1. Turn ignition sw         2. Disconnect warr         3. Turn ignition sw         4. Check voltage b         (+)         Warning system s         (+)         Warning system s         Connector         M62         Is the inspection res         YES       >> GO TO         NO       >> Repair t         2.CHECK WARNIN         1. Turn ignition sw         2. Disconnect the	tch OFF. hing system s tch ON. etween warr erminals witch ferminal 5 ult normal? 2. he warning s IG SYSTEMS tch OFF. TS control u	(-) Ground E Systems ON india S ON INDICATO	Voltage (Approx.) Battery voltage Cator power : DR SIGNAL F	supply circuit.		tch harness con-
1. Turn ignition sw         2. Disconnect warr         3. Turn ignition sw         4. Check voltage b         (+)         Warning system s         (+)         Warning system s         Connector         M62         Is the inspection res         YES       >> GO TO         NO       >> Repair t         2.CHECK WARNIN         1. Turn ignition sw         2. Disconnect the	tch OFF. hing system s tch ON. etween warr erminals witch ferminal 5 ult normal? 2. he warning s IG SYSTEMS tch OFF. TS control u	(-) Ground E Systems ON india S ON INDICATO	Voltage (Approx.) Battery voltage Cator power : DR SIGNAL F	supply circuit.		tch harness con-
1. Turn ignition sw         2. Disconnect warn         3. Turn ignition sw         4. Check voltage b	tch OFF. hing system s tch ON. etween warr erminals witch ferminal 5 ult normal? 2. he warning s IG SYSTEMS tch OFF. TS control u	(-) Ground E Systems ON india S ON INDICATO	Voltage (Approx.) Battery voltage Cator power : DR SIGNAL F	supply circuit.		tch harness con-
1. Turn ignition sw         2. Disconnect warn         3. Turn ignition sw         4. Check voltage b	tch OFF. hing system s tch ON. etween warr erminals switch ferminal 5 ult normal? 2. he warning s IG SYSTEM tch OFF. TS control u between the	(-) Ground E Systems ON india S ON INDICATO	Coltage (Approx.) Battery voltage Cator power so DR SIGNAL For hector. It harness co	supply circuit.		tch harness con-
1. Turn ignition sw         2. Disconnect warr         3. Turn ignition sw         4. Check voltage b	tch OFF. hing system is tch ON. etween warr erminals switch ferminal 5 ult normal? 2. he warning s IG SYSTEM: tch OFF. TS control u between the Warnin ial Connec	(-) Ground Esystems ON india S ON INDICATO Init harness conr e ITS control unit ng system switch	Continuity	supply circuit.		tch harness con-
1. Turn ignition sw         2. Disconnect warr         3. Turn ignition sw         4. Check voltage b         T         (+)         Warning system s         Connector         M62         Is the inspection res         YES       >> GO TO         NO       >> Repair t         2. CHECK WARNIN         1. Turn ignition sw         2. Disconnect the         3. Check continuity         nector.         ITS control unit         Connector       Termin         M58       33	tch OFF. hing system is tch ON. etween warr erminals witch ferminal 5 ult normal? 2. he warning si iG SYSTEM tch OFF. TS control u between the Marnin al Connect M62	(-) Ground E Systems ON india S ON INDICATO Init harness conr e ITS control unit ng system switch	Coltage (Approx.) Battery voltage Cator power so DR SIGNAL For hector. It harness co	supply circuit.		
1. Turn ignition sw         2. Disconnect warn         3. Turn ignition sw         4. Check voltage b         T         (+)         Warning system s         Connector         M62         Is the inspection res         YES       >> GO TO         NO       >> Repair t         2. CHECK WARNIN         1. Turn ignition sw         2. Disconnect the         3. Check continuity         nector.         ITS control unit         Connector       Termin         M58       33         Is the inspection res       33	tch OFF. hing system s tch ON. etween warr erminals switch ferminal 5 ult normal? 2. he warning s IG SYSTEMS tch OFF. TS control u between the Marnin al Connect M62 ult normal?	(-) Ground Esystems ON india S ON INDICATO Init harness conr e ITS control unit ng system switch	Continuity	supply circuit.		
1. Turn ignition sw         2. Disconnect warn         3. Turn ignition sw         4. Check voltage b         (+)         Warning system s         (+)         Warning system s         Connector         M62         Is the inspection res         YES       >> GO TO         NO       >> Repair t         2. CHECK WARNIN         1. Turn ignition sw         2. Disconnect the         3. Check continuity nector.         ITS control unit         Connector         M58       33         Is the inspection res         YES       >> GO TO	tch OFF. hing system is tch ON. etween warr erminals switch ferminal 5 ult normal? 2. he warning side of the second of	(-) Ground Esystems ON india S ON INDICATO Init harness conr e ITS control unit ng system switch ctor Terminal 3	Continuity Yes	supply circuit.		
1. Turn ignition sw         2. Disconnect warn         3. Turn ignition sw         4. Check voltage b         (+)         Warning system s         (+)         Warning system s         Connector         M62         Is the inspection res         YES       >> GO TO         NO       >> Repair t         2. CHECK WARNIN         1. Turn ignition sw         2. Disconnect the         3. Check continuity nector.         ITS control unit         Connector         M58       33         Is the inspection res         YES       >> GO TO	tch OFF. hing system is tch ON. etween warr erminals witch ferminal 5 ult normal? 2. he warning s iG SYSTEM tch OFF. TS control u between the warning al Connect ult normal? 3. he harnesse	ing system swit	Continuity Yes	supply circuit. FOR OPEN	ing system swi	

## WARNING SYSTEMS ON INDICATOR CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

ITS cor	ntrol unit		Continuity
Connector	Terminal	Ground	Continuity
58	33	*	No

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair the harnesses or connectors.

**4.**CHECK WARNING SYSTEMS ON INDICATOR

Check the warning systems ON indicator. Refer to DAS-202, "Component Inspection".

Is the inspection result normal?

- YES >> Replace the ITS control unit. Refer to DAS-66. "Removal and Installation ITS Control Unit".
- NO >> Replace warning systems switch. DAS-138, "Removal and Installation".

#### Component Inspection

INFOID:00000008932658

#### 1. CHECK WARNING SYSTEMS ON INDICATOR

Apply battery voltage to warning systems switch terminals 3 and 5, and then check if the warning systems ON indicator illuminates.

Tern	ninals		Warning sys-
(+)	(-)	Condition	tems ON indica- tor
5	3	When the battery voltage is applied	On
5	5	When the battery voltage is not applied	Off

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace the warning systems switch. Refer to <u>DAS-138</u>, "Removal and Installation".

### WARNING BUZZER CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >	[BSW]
WARNING BUZZER CIRCUIT	
Component Function Check	INFOID:000000008932659
1.CHECK WARNING BUZZER	
<ol> <li>Turn the ignition switch ON.</li> <li>Select the active test item "BUZZER" of "BCM" with CONSULT.</li> <li>With operating the test item, check the operation.</li> </ol>	
On : Warning buzzer is activated.	
Off : Warning buzzer is not activated.	
Is the inspection result normal?	
YES >> Inspection End. NO >> Refer to <u>DAS-203, "Diagnosis Procedure"</u> .	
Diagnosis Procedure	INFOID:000000008932660
1. CHECK WARNING BUZZER OPERATION	
While activating the buzzer with CONSULT, listen for the buzzer sound. Does warning buzzer sound?	
YES >> Replace the ITS control unit. Refer to <u>DAS-66, "Removal and Installation - ITS Cor</u> NO >> Replace the combination meter (buzzer).	<u>ntrol Unit"</u> .

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#### Symptom Table

INFOID:000000008479991

#### **CAUTION:**

# Perform the self-diagnosis with CONSULT before the symptom diagnosis. Perform the trouble diagnosis if any DTC is detected.

#### NOTE:

Refer to the following for operating conditions of the Blind Spot Warning system.

• Blind Spot Warning system: DAS-146. "System Description".

Symptom		Possible cause	Inspection item/Reference page
Indicator/warning lamps do not il- luminate when ignition switch OFF $\Rightarrow$ ON.	Blind Spot Warning lamp (or- ange) does not illuminate	<ul> <li>Blind Spot Warning warning lamp signal (CAN)</li> <li>Combination meter</li> <li>ITS control unit</li> <li>Blind Spot Warning lamp (combination meter)</li> </ul>	<ul> <li>ITS control unit Active test "BSW WARNING LAMP". Refer to <u>DAS-152, "CONSULT</u> <u>Function (AVM)"</u>.</li> <li>ITS control unit Data monitor "BSW WARN LMP". Refer to <u>DAS-152, "CONSULT</u> <u>Function (AVM)"</u>.</li> <li>Combination meter Data mon- itor "BSW W/L". Refer to <u>MWI-18, "CONSULT</u> <u>Function (METER/M&amp;A)"</u>.</li> </ul>
	Blind Spot Warning/Backup Collision Warning lamp (or- ange) do not illuminate	<ul><li>Combination meter</li><li>ITS control unit</li></ul>	
	<ul><li>All of indicator/warning lamps do not illuminate;</li><li>Blind Spot Warning lamp</li><li>Warning systems ON indi- cator</li></ul>	<ul> <li>Power supply and ground circuit of ITS control unit</li> <li>ITS control unit</li> <li>Combination meter</li> </ul>	Power supply and ground circuit of ITS control unit. Refer to <u>DAS-198, "Diagnosis Procedure"</u> .
	Warning systems ON indica- tor (on the warning systems switch) does not illuminate	<ul> <li>Harness between ITS control unit and warning systems switch</li> <li>Warning systems switch</li> <li>ITS control unit</li> </ul>	Warning systems ON indicator circuit. Refer to <u>DAS-201, "Diag-nosis Procedure"</u> .
	Blind Spot Warning indicator does not turn ON	<ul> <li>Harness between ITS control unit and Blind Spot Warning indicator</li> <li>Blind Spot Warning indicator</li> </ul>	Perform self-diagnosis of Blind Spot Warning indicator. Refer to DAS-152, "CONSULT Function (AVM)".
BSW system is not activated. (Indicator/warning lamps illuminate when ignition switch OFF $\Rightarrow$ ON.)	Warning systems ON indica- tor is not turned ON ⇔ OFF when operating warning sys- tems switch	<ul> <li>Harness between ITS control unit and waning systems switch</li> <li>Harness between warning systems switch and ground</li> <li>ITS control unit</li> <li>Warning systems switch</li> </ul>	<ul> <li>Warning systems switch circuit. Refer to <u>DAS-199</u>, "Diagnosis <u>Procedure"</u>.</li> <li>BSW system setting cannot be turned ON/OFF on the naviga- tion screen. Refer to <u>DAS-207</u>, "Descrip- tion".</li> </ul>
	Buzzer is not sounding	<ul> <li>Combination meter (warning buzzer)</li> <li>ITS control unit</li> </ul>	Combination meter. Refer to DAS-203, "Component Function Check".
<ul> <li>Blind Spot Warning functions are not timely (Example)</li> <li>Does not function when approaching a lane marker with a vehicle in the blind spot.</li> <li>Functions when driving in the middle of lane.</li> </ul>		<ul><li>Camera aiming</li><li>Lane camera unit</li></ul>	Camera aiming. Refer to <u>DAS-</u> <u>174, "Description"</u> .

# SWITCH DOES NOT TURN ON / SWITCH DOES NOT TURN OFF < SYMPTOM DIAGNOSIS > SWITCH DOES NOT TURN ON / SWITCH DOES NOT TURN OFF Description

<ul> <li>The switch does not turn ON</li> <li>When the Blind Spot Warning system setting is ON, the Blind Spot Warning ON indicator does not illuminate even if the warning system switch is depressed.</li> </ul>			
<ul> <li>The switch does not turn OFF</li> <li>The Blind Spot Warning ON indicator does not turn off even if the warning system switch is pressed when the Blind Spot Warning ON indicator illuminates.</li> </ul>	С		
Diagnosis Procedure	D		
1.CHECK BLIND SPOT WARNING SYSTEM SETTING	E		
<ol> <li>Start the engine.</li> <li>After starting the engine wait for 5 seconds or more.</li> <li>Check that Blind Spot Warning system setting on the vehicle information display screen is ON.</li> <li><u>Is Blind Spot Warning system setting ON?</u></li> </ol>	F		
YES >> GO TO 2. NO >> Enable the Blind Spot Warning system setting. 2.WARNING SYSTEM SWITCH INSPECTION	G		
<ol> <li>Start the engine.</li> <li>Check that warning system switch operates normally in "DATA MONITOR" of "AVM" with CONSULT. Is the inspection result normal?</li> </ol>	Н		
YES $>>$ GO TO 3. NO $>>$ GO TO 5. <b>3.</b> CHECK BLIND SPOT WARNING ON INDICATOR CIRCUIT	I		
<ol> <li>Start the engine.</li> <li>Select the active test item "BSW ON IND" of "AVM" with CONSULT.</li> <li>Check if the Blind Spot Warning ON indicator illuminates when the test item is operated.</li> </ol>	J		
Is the inspection result normal? YES >> GO TO 5. NO >> GO TO 4.	Κ		
4.PERFORM THE SELF-DIAGNOSIS OF COMBINATION METER	L		
<ol> <li>Perform "All DTC Reading" with CONSULT.</li> <li>Check if the DTC is detected in self-diagnosis results of "METER/M&amp;A". Refer to <u>MWI-27, "DTC Index"</u>. <u>Is the inspection result normal?</u> YES &gt;&gt; GO TO 6. NO &gt;&gt; GO TO 5.</li> </ol>	M		
5.PERFORM THE SELF-DIAGNOSIS	Ν		
Is any DTC detected?	DAS		
YES >> GO TO 6. NO >> GO TO 7.	Р		
6.REPAIR OR REPLACE MALFUNCTIONING PARTS.			
Repair or replace malfunctioning parts.			

>> GO TO 7.

7. CHECK BLIND SPOT WARNING SYSTEM

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#### SWITCH DOES NOT TURN ON / SWITCH DOES NOT TURN OFF

#### < SYMPTOM DIAGNOSIS >

- Erase "self-diagnosis result", and then perform "All DTC Reading" again after performing the action test. (Refer to <u>DAS-171, "Description"</u> for action test.)
- 2. Check that the Blind Spot Warning system is normal.

>> Inspection End.

#### BSW SYSTEM SETTINGS CANNOT BE TURNED ON/OFF IN VEHICLE INFOR-MATION DISPLAY

[BSW] < SYMPTOM DIAGNOSIS > BSW SYSTEM SETTINGS CANNOT BE TURNED ON/OFF IN VEHICLE IN-А FORMATION DISPLAY Description INFOID:00000008479994 BSW system setting is not selectable on the vehicle information display screen. • NOTE: When the ignition switch is in ACC position, Blind Spot Warning system setting cannot be changed. - "Blind Spot Warning" is not indicated on the vehicle information display screen. - The switching between ON and OFF cannot be performed by operating the Setting screen on the vehicle information display system. D - The item "Blind Spot Warning" on the vehicle information display screen is not active. The Blind Spot Warning system setting differs from the one set at the previous driving. NOTE: Turn OFF the ignition switch and wait for 5 seconds or more. Е Diagnosis Procedure INFOID:000000008479995 1. CHECK BLIND SPOT WARNING SYSTEM SETTING 1. Start the engine. Check that the Blind Spot Warning system settings is selectable on the vehicle information display screen. 2. Is the inspection result normal? YES >> GO TO 3. NO >> GO TO 2. Н 2. PERFORM THE SELF-DIAGNOSIS Perform self-diagnosis with CONSULT. 1. 2. Check if the DTC is detected in self-diagnosis results of "AVM", "MULTI AV" and "METER/M&A". Refer to the following: AVM: DAS-20, "DTC Index" MULTI AV (with BOSE): AV-309, "DTC Index" MULTI AV (without BOSE): AV-216, "DTC Index" METER/M&A: MWI-27, "DTC Index" Is any DTC detected? Κ YES >> Repair or replace malfunctioning parts. NO >> Inspection End. 3.CHECK DATA MONITOR OF ITS CONTROL UNIT L Check that "BSW SELECT" operates normally in "DATA MONITOR" of "AVM" with CONSULT. Is the inspection result normal? M YES >> Refer to DAS-152, "CONSULT Function (AVM)". NO >> GO TO 4. **4**.CHECK MULTIFUNCTION SWITCH Ν Operate the multifunction switch to check that the audio, navigation system, and air conditioner operate properly. Is the inspection result normal? DAS YES >> Replace the ITS control unit. Refer to DAS-66, "Removal and Installation - ITS Control Unit". NO >> Repair or replace malfunctioning parts. Ρ

# NORMAL OPERATING CONDITION

#### Description

INFOID:00000008479996

[BSW]

#### PRECAUTIONS FOR BLIND SPOT WARNING (BSW)

- The Blind Spot Warning system is not a replacement for proper driving procedure and are not designed to
  prevent contact with vehicles or objects. When changing lanes, always use the side and rear mirrors and
  turn and look in the direction driver will move to ensure it is safe to change lanes. Never rely solely on the
  Blind Spot Warning system.
- The Blind Spot Warning system may not provide a warning for vehicles that pass through the detection zone quickly.
- Do not use the Blind Spot Warning system when towing a trailer.
- Excessive noise (e.g., audio system volume, open vehicle window) will interfere with the chime sound, and it may not be heard.
- The rear view camera may not be able to detect and activate Blind Spot Warning when certain objects are present such as:
- Pedestrians, bicycles, animals.
- Several types of vehicles such as motorcycles.
- Oncoming vehicles.
- Vehicles remaining in the detection zone when driver accelerates from a stop.
- A vehicle merging into an adjacent lane at a speed approximately the same as vehicle.
- A vehicle approaching rapidly from behind.
- Another vehicle which overtakes this vehicle rapidly.
- Severe weather or road spray conditions may reduce the ability of the rear view camera to detect other vehicles.
- The rear view camera detection zone is designed based on a standard lane width. When driving in a wider lane, the rear view camera may not detect vehicles in an adjacent lane. When driving in a narrow lane, the rear view camera may detect vehicles driving two lanes away.
- The rear view camera is designed to ignore most stationary objects, however objects such as guardrails, walls, foliage and parked vehicles may occasionally be detected. This is a normal operating condition.

#### PRECAUTIONS FOR BLIND SPOT WARNING

- Do not use the Blind Spot Warning system under the following conditions because the system may not function properly:
- During bad weather (e.g., rain, fog, snow, wind, etc.)
- When driving on slippery roads, such as on ice or snow, etc.
- When driving on winding or uneven roads.
- When there is a lane closure due to road repairs.
- When driving in a makeshift lane.
- When driving on roads where the lane width is too narrow.
- When driving with a tire that is not within normal tire conditions (e.g., tire wear, low tire pressure, installation of spare tire, tire chains, non-standard wheels).
- When the vehicle is equipped with non-original brake parts or suspension parts.
- The rear view camera may not detect lane markers in the following situations and the Blind Spot Warning system may not operate properly:
- On roads where there are multiple parallel lane markers; lane markers that are faded or not painted clearly; yellow painted lane markers; nonstandard lane markers; lane markers covered with water, dirt, snow, etc.
- On roads where discontinued lane markers are still detectable.
- On roads where there are sharp curves.
- On roads where there are sharply contrasting objects, such as shadows, snow, water, wheel ruts, seams or lines remaining after road repairs.
- On roads where the traveling lane merges or separates.
- When the vehicle traveling direction does not align with the lane markers.
- When rain, snow or dirt adheres to the lens of a the rear view camera unit.
- When a sudden change in brightness occurs. (e.g., when the vehicle enters or exits a tunnel or under a bridge.)
- When steering quickly.
- When the hazard warning flashers are operated.
- When driving on a curve at a high speed.

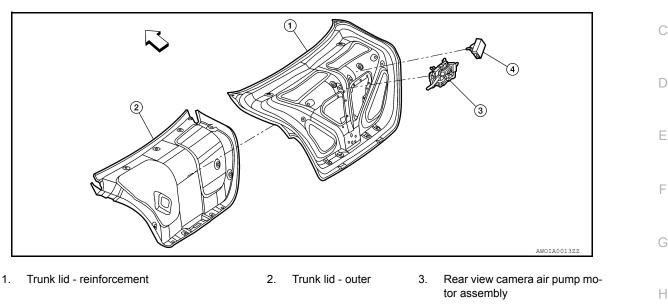
# < REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION CONTROL UNIT

## Exploded View

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INFOID:000000008942913

INFOID:000000008942915



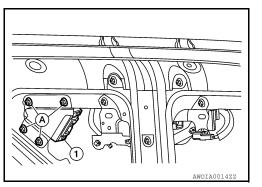
4. Rear view camera washer control unit

Removal and Installation - Rear View Camera Washer Control Unit

#### REMOVAL AND INSTALLATION

Removal

- 1. Remove the trunk lid finisher. Refer to INT-33, "TRUNK LID FINISHER : Removal and Installation".
- 2. Disconnect the harness connector from the rear view camera washer control unit.
- 3. Remove the rear view camera washer control unit nuts (A).
- 4. Remove the rear view camera washer control unit (1).



Installation Installation is in the reverse order of removal.

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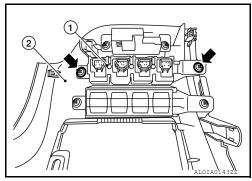
#### < REMOVAL AND INSTALLATION >

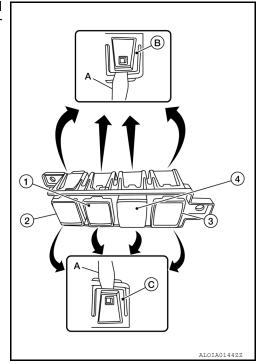
WARNING SYSTEMS SWITCH

Removal and Installation

#### REMOVAL

- 1. Remove the instrument lower panel LH. Refer to IP-21, "Removal and Installation".

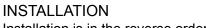




 Release upper tab (B) and lower tab (C) using a suitable tool (A), then remove the warning system switch (4) from the upper switch carrier.

(1) Trunk opener switch

- (2) VDC switch
- (3) Heated steering wheel switch



Installation is in the reverse order of removal.

INFOID:000000008527308

# < REMOVAL AND INSTALLATION >

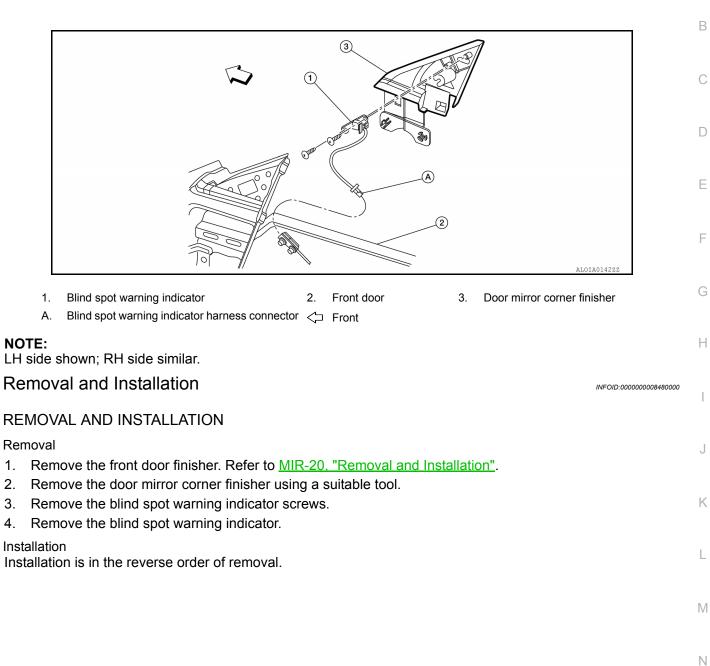
# BSW INDICATOR

#### Exploded View

INFOID:00000008479999

[BSW]

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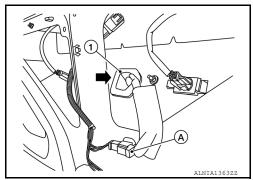
#### < REMOVAL AND INSTALLATION >

# REAR VIEW CAMERA

#### Removal and Installation

#### REMOVAL

- 1. Remove trunk lid finisher. Refer to INT-33, "Exploded View".
- 2. Disconnect the harness connector (A) from rear view camera.
- 3. Push the rear view camera (1) in direction shown (←) and pull out to remove.



INSTALLATION Installation is in the reverse order of removal. INFOID:000000008527309

[BSW]

#### **AIR PUMP**

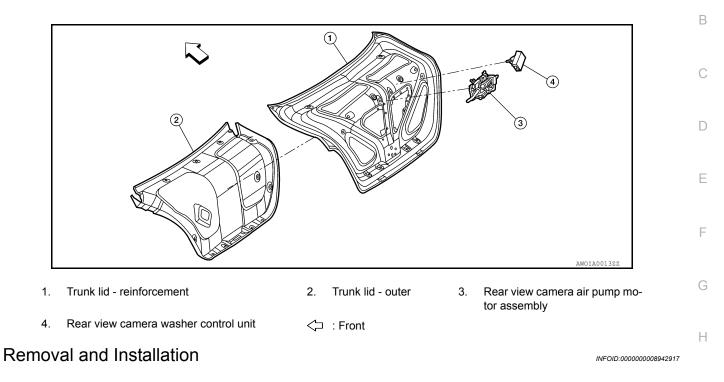
#### < REMOVAL AND INSTALLATION > AIR PUMP

Exploded View

[BSW]

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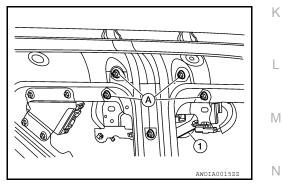
INFOID:000000008942916



#### REMOVAL AND INSTALLATION

Removal

- 1. Remove the trunk lid finisher. Refer to INT-33, "TRUNK LID FINISHER : Removal and Installation".
- 2. Disconnect the air tube from the rear view camera air pump motor.
- 3. Disconnect the harness connector from the rear view camera air pump motor.
- 4. Remove the rear view camera air pump motor bracket nuts (A).
- 5. Remove the rear view camera air pump motor assembly (1).



Installation Installation is in the reverse order of removal.

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# PRECAUTION PRECAUTIONS

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

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

#### WARNING:

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

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

#### WARNING:

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

#### Precaution for Work

INFOID:000000008599598

- 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.

#### Precautions For Harness Repair

INFOID:000000008480007

ITS communication uses a twisted pair line. Be careful when repairing it.

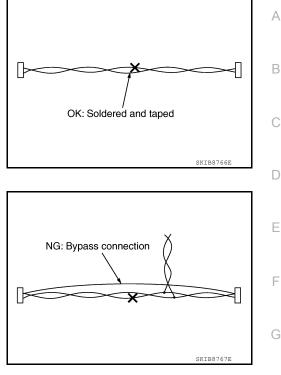
# PRECAUTIONS

#### < PRECAUTION >

#### [MOD]

• Solder the repaired area and wrap tape around the soldered area. **NOTE:** 

A fray of twisted lines must be within 110 mm (4.33 in).



• Bypass connection is never allowed at the repaired area. **NOTE:** 

Bypass connection may cause ITS communication error. The spliced wire becomes separated and the characteristics of twisted line are lost.

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# PREPARATION

# PREPARATION

# Special Service Tool

INFOID:000000008542323

The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

The actual shapes of Rent-Moore tools may drifer from those of special service tools indstrated here.				
Tool number (Kent-Moore No.) Tool name	Description			
(J-46534) Trim tool set	Removing trim components			

#### < SYSTEM DESCRIPTION >

# SYSTEM DESCRIPTION **COMPONENT PARTS**

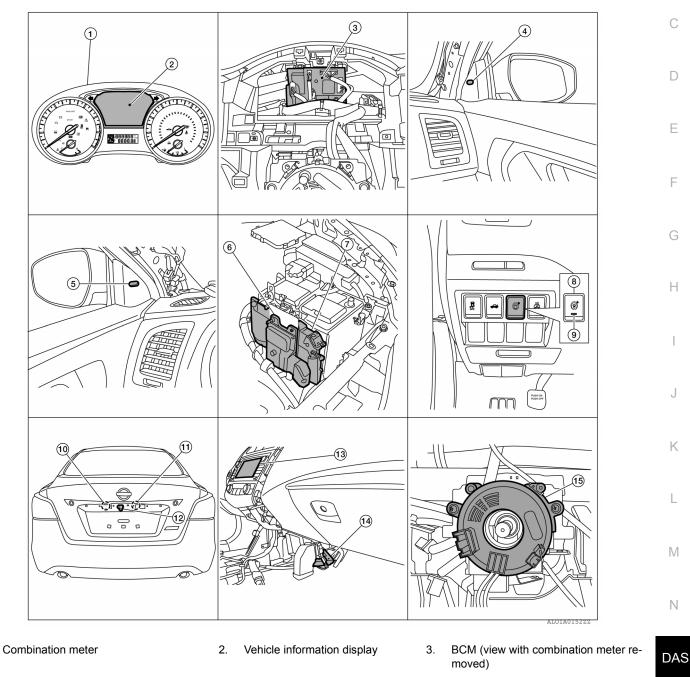
## **Component Parts Location**

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- Blind spot warning indicator RH 4.
- 7. ECM

1.

- 10. Rear view camera washer control unit
- 13. AV control unit (center display)

## **Component Description**

- 5. Blind spot warning indicator LH
- 8. Warning systems switch
- 11. Rear view camera air pump motor 14. ITS control unit
- (view with center console removed)
- TCM 6.
- 9. Warning systems ON indicator
- 12. Rear view camera
- 15. Steering angle sensor (view with steering wheel removed)

INFOID:000000008660113

## **COMPONENT PARTS**

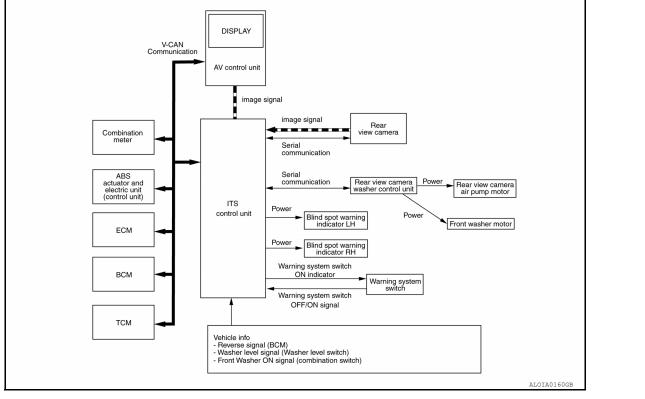
#### < SYSTEM DESCRIPTION >

Component	Description	
ITS control unit	<ul> <li>Being connected with rear view camera via ITS communication, receives vehicle detection signal and transmits Moving Object Detection indicator signal and Moving Object Detection indicator dimmer signal to rear view camera</li> <li>Being connected with rear view camera unit via ITS communication, receives detected rear condition signal</li> <li>Receives steering angle sensor signal from steering angle sensor via CAN communication</li> <li>Judges a Moving Object Detection indicator ON/OFF state and an approach state to the rear proximity of the vehicle.</li> <li>Activates the warning buzzer and warning systems ON indicator</li> <li>Transmits Moving Object Detection lamp signal to combination meter via CAN communication</li> </ul>	
Blind Spot Warning indicator LH/ RH	Receives Moving Object Detection indicator operation signal from rear view camera and turns OFF, turns ON or blinks	
Warning system switch	Inputs the switch signal to ITS control unit	
Warning system switch indicator (on the warning systems switch)	Indicates Moving Object Detection system status	
Rear view camera	<ul> <li>Detects the lane marker by the built-in camera</li> <li>Transmits detected lane condition signal to ITS control unit</li> </ul>	
ABS actuator and electric unit (control unit)	<ul> <li>Transmits vehicle speed signal to ITS control unit via CAN communication</li> <li>Transmits yaw rate signal/side G sensor signal to ITS control unit via CAN communication</li> </ul>	
Buzzer (combination meter)	Receives buzzer signal from ITS control unit via CAN and sounds buzzer.	
Combination meter (vehicle information display)	<ul> <li>Turns the Moving Object Detection (MOD) warning indicator ON/OFF according to the signals from the ITS control unit via CAN communication</li> <li>Receives MOD ON indicator signal via CAN communication.</li> </ul>	
Steering angle sensor	Transmits steering angle sensor signal to ITS control unit via CAN communication	
BCM	<ul> <li>Transmits turn signal indicator to ITS control unit via CAN communication</li> <li>Transmits dimmer signal to ITS control unit via CAN communication</li> </ul>	
ECM	Transmits engine speed signal to ITS control unit via CAN communication	
ТСМ	Transmits the output shaft speed signal, input speed signal, current gear position signal and shift position signal to ITS control unit via CAN communication	
AV control unit	Receives the various systems and camera signals via CAN communication and routes them to the center display	
Center display	Displays the various system screen signals according to the priority level received via CAN com- munication	
Rear view camera washer control unit	Controls the air pump to drive air to the rear camera lens according to the signals received from the ITS control unit	
Rear view camera air pump motor	Drives air to the rear camera lens according to the signals received from the pump control unit	

# SYSTEM

# System Description

## SYSTEM DIAGRAM



## ITS CONTROL UNIT INPUT/OUTPUT SIGNAL ITEM

#### Input Signal Item

Transmit unit	Signal name		Description	K
ECM	CAN communication	Engine speed signal	Receives engine status	
		Door open status signal	Receives door open status	
BCM	CAN communication	Light status signal	Receives light status	
		Turn signal	Receives turn signal status	
Washer level switch	Hard wire		Washer fluid level status	Μ
ABS actuator and electric unit (control unit)	CAN communication	Wheel speed signal	Receives wheel speed	Ν
ТСМ	CAN communication	Shift selector position signal	Receives shift selector position	
Combination meter	CAN communication	Moving Object Detection ON/ OFF signal	Receives the ON/OFF status for Moving Object Detection function	DAS
Rear view cam- era	NTSC	Video signal	Receives the Rear View Camera image from camera for Moving Object Detection function in ITS controller	Р

**Output Signal Item** 

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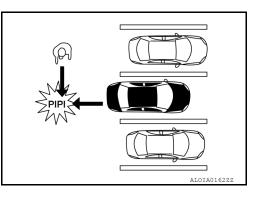
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## < SYSTEM DESCRIPTION >

Reception unit	Signal name		Description
Combination meter	CAN communication	Buzzer Request	Transmits a buzzer request signal when a moving object is detected.
Display	CAN communication	Visual signal request	Transmits a visual signal request from the ITS controller to display Rear View while the shift selector is in R (reverse).

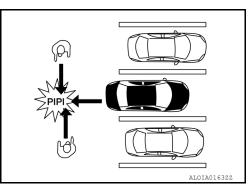
#### FUNCTION DESCRIPTION

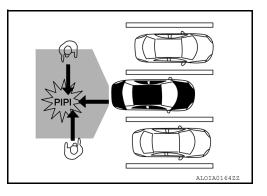
- The Moving Object Detection (MOD) system can help alert the driver of approaching vehicles or rear objects when the driver is backing out of a parking space.
- The MOD system comprises of the rear view camera as the main detection system, which is located on the trunk as illustrated.
- The MOD system operates at speeds below 8 km/h (5 MPH) whenever the vehicle is in R (reverse).



• The MOD system uses the rear view camera to detect approaching moving objects from either side.

• The MOD system can detect moving objects on either side as close as rear obstacles of up to approximately 3 m (10 feet).





#### MOVING OBJECT DETECTION SYSTEM OPERATION DESCRIPTION

- ITS control unit enables Moving Object Detection system.
- Combination meter turns Moving Object Detection ON indicator lamp ON/OFF according to the signals from ITS control unit via CAN communication.
- ITS control unit starts the control as follows, based on a vehicle detection signal.

Operation Condition of Moving Object Detection System

- ITS control unit performs the control when the following conditions are satisfied:
- Moving Object Detection ON indicator: ON
- When the vehicle is moving in R (reverse) at 8 km/h (5 MPH) or less.

#### NOTE:

• When the Moving Object Detection system setting on the Vehicle Information Display is ON.

#### **DAS-220**

## SYSTEM

< SYSTEM DESCRIPTION >	[MOD]
<ul> <li>Moving Object Detection braking will not operate or will stop operating and only a warning chime wi under the following conditions:</li> <li>When driving with a tire that is not within normal tire conditions (pressure, wear, chain, spare, etc.)</li> </ul>	ll sound A
<ul> <li>When the vehicle is equipped with non-original brake parts or suspension parts.</li> <li>Do not use the MOD system when towing a trailer.</li> </ul>	5
• Excessive noise such as the audio system will interfere with the chime sound, and it may not be hea	rd. B
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## OPERATION

[MOD]

## System Display and Warning

#### INDICATOR AND WARNING LAMP

The MOD system can be turned ON or OFF for the current ignition cycle using the warning system switch. When toggled between ON and OFF, the indicator will appear on the right side of the rear view camera screen.

No.	Name	Description
1	MOD indicator (blue)	<ul> <li>Turns ON while MOD system is ON</li> <li>Under the following conditions, the MOD indicator (blue) will blink.</li> <li>When the VDC system (except TCS function) or ABS operates.</li> <li>When the VDC system is turned off.</li> </ul>
1	MOD warning lamp (orange)	<ul> <li>Turns ON when MOD system is malfunctioning</li> <li>Blinks under the following conditions:</li> <li>When the component temperature reaches high level.</li> <li>When rear view camera blockage is detected.</li> </ul>

#### DISPLAY AND WARNING OPERATION

Vehicle condition/Driver's operation		operation		
Moving Ob- ject Detec- tion ON indicator	Vehicle speed (Approx.) [km/h (MPH)]	Status of vehi- cle detection within detec- tion area	Indication on the Moving Object Detection indicator	Buzzer
OFF	—	—	OFF	OFF
	Less than ap- prox. 8 km/h ( 5 MPH)	Vehicle is detected	ON	ON
Blue	Approx. 8 km/h ( 5 MPH) or more	Vehicle is ab- sent	ON	OFF
		Vehicle is detected	ON	OFF
		Vehicle is not detected	ON	OFF

# HANDLING PRECAUTION

## Precautions for Moving Objects Detection

## REAR VIEW CAMERA HANDLING

- The rear view camera which is located on the back of the trunk performs the Moving Object Detection system.
- Always keep the rear view camera lens clean.
- Do not attach a sticker (including transparent material), install an accessory or paint work over the camera lens.
- Do not strike or scratch the lens causing physical damage to the camera or the surrounding area.

#### MOVING OBJECT DETECTION

- The Moving Object Detection system is not a replacement for proper driving procedure and is not designed to prevent contact with vehicles or objects. When backing up, always look in the direction driver will move to ensure it is safe to proceed. Never rely solely on the Moving Object Detection system.
- Using the Moving Object Detection system under some road or weather conditions could lead to improper system operation. Always rely on driver's own steering and braking operation to avoid accidents.
- The Moving Object Detection system may not provide a warning for vehicles that pass through the detection F zone quickly.
- Do not use the Moving Object Detection system when towing a trailer.
- Excessive noise (e.g., audio system volume, open vehicle window) will interfere with the chime sound, and it may not be heard.
- The rear view camera may not be able to detect and activate Moving Object Detection when certain objects are present such as:
- Pedestrians, bicycles, animals.
- A vehicle passing at a speed greater than approximately 15 MPH (24km/h).
- Severe weather or road spray conditions may reduce the ability of the radar to detect other vehicles.
- Do not use the MOD system under the following conditions because the system may not function properly:
- When driving with a tire that is not within normal tire condition (example: tire wear, low pressure, spare tire, chain, non-standard wheels).
- When the vehicle is equipped with non-original brake parts or suspension parts.

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# **DIAGNOSIS SYSTEM (ITS CONTROL UNIT)**

#### < SYSTEM DESCRIPTION >

# DIAGNOSIS SYSTEM (ITS CONTROL UNIT)

## CONSULT Function (AVM)

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[MOD]

## APPLICATION ITEMS

CONSULT performs the following functions via CAN communication using ITS control unit.

Diagnosis mode	Description		
Self Diagnostic Result	Displays the name of a malfunctioning system stored in the ITS control unit		
Data Monitor	Displays ITS control unit input/output data in real time		
Work support	Displays causes of automatic system cancellation occurred during system control		
Active Test	Enables an operational check of a load by transmitting a driving signal from the ITS control unit t the load		
ECU identification	Displays ITS control unit part number		
Configuration	The vehicle specification can be written when replacing the ITS control unit		

#### SELF DIAGNOSTIC RESULT

Refer to DAS-86, "DTC Index".

#### DATA MONITOR

Monitored item [Unit]	Description
ST ANGLE SENSOR SIGNAL [On/Off]	Indicates [On/Off] status as judged from ITS control unit (Angle sensor transmits angle signal through CAN communication)
REVERSE SIGNAL [On/Off]	Indicates [On/Off] status as judged from ITS control unit (TCM transmits reverse signal through CAN communication)
VEHICLE SPEED SIGNAL [On/Off]	Indicates vehicle speed calculated from ITS control unit through CAN communication [ABS ac- tuator and electric unit (control unit) transmits vehicle speed signal (wheel speed) through CAN communication]
CAMERA SWITCH SIGNAL [On/Off]	Indicates [On/Off] status of camera switch signal as judged from ITS control unit
CAMERA OFF SIGNAL [On/Off]	Indicates [On/Off] status of camera OFF signal as judged from ITS control unit
ST ANGLE SENSOR TYPE [Absolute/Not]	Indicates whether steering angle sensor type is absolute or not (ON means "controlling")
STEERING GEAR RATIO TYPE [Type 0/1]	Indicates the type of the steering gear ratio (type 1 or 2)
STEERING POSITION [LHD/RHD]	Indicates the steering position (LHD or RHD)
REAR CAMERA IMAGE SIGNAL [OK/Not]	Indicates the status of the rear camera image as read from ITS control unit through dedicated ITS communication lines
WASH SW [ON/OFF]	Indicates the state of the wash switch indicator output
R-CAMERA COMM STATUS [OK/Not]	Indicates the status of the rear camera communication status as read from ITS control unit through dedicated ITS communication lines
R-CAMERA COMM LINE [OK/Not]	Indicates the condition of the rear camera communication line whether transmitting properly through dedicated ITS communication lines
PUMP COMM STATUS [OK/NG]	Indicates the state of the communication signal from pump control unit
ILL [On/Off]	Indicates [On/Off] status of the illumination signal
ITS SW 1 [On/Off]	Indicates the state of the warning system switch as seen by the ITS control unit

## **DIAGNOSIS SYSTEM (ITS CONTROL UNIT)**

#### < SYSTEM DESCRIPTION >

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Monitored item [Unit]	Description	
ITS SW 1 IND [On/Off]	Indicates the state of the warning system switch indicator output	
TURN SIGNAL [Left/N/Right]	Indicates [Left/N/Right] status of the turn signal output	В
Rear Camera Image Output signal [OK/NG]	Indicates the input state of video image from rear camera	С
ITS SW_2 [ON/OFF/No setting]	Indicates the state of the warning system secondary switch as seen by the ITS control unit	
ITS SW_2 IND [ON/OFF/No setting]	Indicates the state of the warning system secondary switch indicator output	D

#### WORK SUPPORT

Work support items	Description	
PREDICTIVE COURSE LINE DISPLAY	Setting whether predictive guide line displays or not	
INITIALIZE CAMERA IMAGE CALIBRATION	Start the initialization process of the rear camera	
STEERING ANGLE SENSOR ADJUSTMENT	Execute register neutral point of steering angle sensor	
CALIBRATING CAMERA IM- AGE (REAR CAMERA)	Displays the various values of the rear camera during the calibration process	
REAR WIDE-VIEW FIXED GUIDE LINE CORRECTION	Adjustment the position of fixed guide line on rear wide view	
REAR CAMERA ITS	Displays and sets camera image calibration values	
CAUSE OF LDW CANCEL	Displays the information about reason of LDW cancellation	
CAUSE OF BSW CANCEL	Displays the information about reason of BSW cancellation	

# ACTIVE TEST

## **CAUTION:**

- Never perform "Active Test" while driving the vehicle.
- The "Active Test" cannot be performed when the following systems warning indicators are illuminated:
- Lane Departure Warning indicator
- Blind Spot Warning indicator
- Place the shift selector to P (park) position, and then perform the test.

Test item	Description		M
WASH ACTIVE	ON	Activates the washer to clean the lens of rear camera	
WASH ACTIVE	OFF		N
LED LH	ON	Flashes the left side LED light for ITS system	
	OFF		
LED RH	ON	Flashes the right side LED light for ITS system	DAS
	OFF		
AIR ACTIVE	ON	Activates the air pump to clean the lens of rear camera	P
AIR ACTIVE	OFF		Г
AIR & WASH ACTIVE	ON	Activates the air pump and washer to clean the lens of rear camera	
	OFF		

#### **BSW ON INDICATOR**

## **DIAGNOSIS SYSTEM (ITS CONTROL UNIT)**

#### < SYSTEM DESCRIPTION >

Test item	Oper- ation	Description	Blind Spot Warning ON indicator lamp (Yellow)
BSW ON INDICATOR	Off	Stops transmitting the Blind Spot Warning ON indicator signal below to end the test	Off
BSW ON INDICATOR	On	Transmits the Blind Spot Warning ON indicator signal to the warning lamp on the door	ON
Washer	Off	Stops transmitting activate signal to washer below to end the test	Off
	On	Transmits activate signal to washer	ON
Air pump	Off	Stops transmitting activate signal to air pump below to end the test	Off
	On	Transmits activate signal to air pump	ON

#### ECU IDENTIFICATION

ITS control unit part number is displayed.

#### CONFIGURATION

The specifications of the vehicle can be written and read in the ITS control unit when replaced.

## < ECU DIAGNOSIS INFORMATION >

# ECU DIAGNOSIS INFORMATION ITS CONTROL UNIT

## **Reference Value**

## VALUES ON THE DIAGNOSIS TOOL

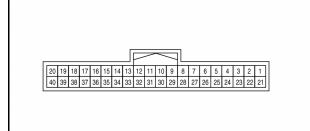
Monitor item		Condition	Value/Status
STEERING ANGLE	Ignition switch ON	Steering angle signal is received	On
STEERING ANGEE	Ignition Switch ON	Steering angle signal is not received	Off
REVERSE SIGNAL	Ignition switch ON	Shift selector in R (reverse)	On
REVERSE SIGNAL		Shift selector is not in R (reverse)	Off
VEHICLE SPEED	While driving	Vehicle speed signal is received	On
VEHICLE SPEED	While driving	Vehicle speed signal is not received	Off
CAMERA SWITCH	Ignition switch ON	Camera switch is pressed	On
CAMERA SWITCH		Camera switch is not pressed	Off
CAMERA OFF	Ignition owitch ON	Purpose switch is pressed	On
SWITCH	Ignition switch ON	Purpose switch is not pressed	Off
TYPE OF STEER AN-	Ignition switch ON	Steering angle sensor type is displayed	Absolute
GLE SENSOR		Steering angle sensor type is not received	Not
TYPE OF STEER	Ignition switch ON	Pattern 1 type of steering gear ratio displayed	Pattern 1
GEAR RATIO	Ignition switch ON	Pattern 2 type of steering gear ratio displayed	Pattern 2
LEFT OR RIGHT	Ignition switch ON	It recognizes steering position is left	LHD
STEER		It recognizes steering position is right	RHD
REAR CAMERA	Ignition switch ON	Rear camera serial status is OK	ОК
COMM STATUS		Rear camera serial status is not OK	NG
REAR CAMERA	Ignition switch ON	Rear camera serial communication signal is received	ОК
COMM LINE		Rear camera serial communication signal is not received	NG
ILL	Ignition switch ON	Illumination is ON	On
	Ignition Switch ON	Illumination is OFF	Off
ITS SW_1	Ignition switch ON	ITS switch is pressed	On
113 300_1		ITS switch is not pressed	Off
ITS SW 1 IND	Ignition switch ON	Indicator of ITS switch 1 is lighting	On
		Indicator of ITS switch 1 is not lighting	Off
		Turn signal left is received	Left
TURN SIGNAL	Ignition switch ON	Turn signal neutral is received	Ν
		Turn signal right is received	Right
	Ignition switch ON	Camera image signal is received	On
R-CAMERA IMAGE		Camera image signal is not received	Off
ITS SW_2	Ignition switch ON	For this vehicle, the displaying is fixed	No setting
ITS SW 2 IND	Ignition switch ON	For this vehicle, the displaying is fixed	No setting
WASH SWITCH SIG-	lapition switch ON	Wash switch signal is pressed	On
NAL	Ignition switch ON	Wash switch signal is not pressed	Off
PUMP COMM STA-	Ignition switch ON	Pump communication signal is received	On
TUS	Ignition switch ON	Pump communication signal is not received	Off

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## < ECU DIAGNOSIS INFORMATION >

# TERMINAL LAYOUT



# 56 55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 72 71 70 69 68 67 66 65 64 63 62 61 60 59 58 57

PHYSICAL VALUES

	nal No. color)	Description			Condition	Value
+	-	Signal name	Input/ Output		Condition	(Approx.)
1	Ground	Washer level switch	Input	Ignition	When washer fluid is low (switch closed)	0 V
(BR)	Ground		Input	switch ON	When washer fluid is not low (switch open)	12 V
2 (Y)	Ground	Washer signal pump to camera	Input	Ignition sw	itch ON	5 V
3 (LG)	Ground	Washer signal camera to pump	Output	Ignition sw	itch ON	5 V
7 (P)	Ground	CAN -L	_	_	_	_
17	Ground	SOW LED signal R	Output	While	LDW/BSW detected	12 V
(G)	Ground	SOW LED Signal R	Output	driving	LDW/BSW is not detected	0 V
20 (G)	Ground	Battery supply	Input	_	_	12 V
22 (BR)	Ground	Serial ground	Output	_	_	0 V
27 (L)	Ground	CAN -H	_	_	_	_
28	Ground	Poverse	Input	Ignition	Shift selector in R (re- verse)	12 V
(R)	Ground	Reverse	Input	switch ON	Shift selector not in R (re- verse)	0 V
32	Ground	Cancel SW output	Input	Ignition	Cancel switch pressed	0 V
(P)	Ciouna	Cancel SW Output	mput	switch ON	Cancel switch not pressed	12 V
33	Ground	LED input	Output	Ignition	Warning system is ON	12 V
(BG)	Gibunu		Output	switch ON	Warning system is OFF	0 V
37	Ground	SOW LED signal L	Output	While	LDW/BSW detected	12 V
(W)	Ground		Culpul	driving	LDW/BSW is not detected	0 V
39 (BG)	Ground	Ignition power supply	Input	Ignition sw	itch ON	Battery Voltage
40 (B)	Ground	Ground	_	_	_	0 V
50, 53	Ground	Shield	_	_	_	0 V
51 (R)	Ground	RR CAM GND	Output	Ignition switch ON	_	0 V

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## **ITS CONTROL UNIT**

#### < ECU DIAGNOSIS INFORMATION >

Terminal No. Description (Wire color) Value Condition (Approx.) Input/ Signal name \_ Output RR CAM ON 6 V Ground Output Ignition switch ON (V RR CAM COMP + Ground Input Ignition switch ON )179ZZ Ground **RR CAM CONT** Input Ignition switch ON 5 V Ground RR CAM COMP + Input Ignition switch ON

#### Fail-safe

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(B)

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(G)

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(B)

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

System	Buzzer	Warning Indicator lamp	Description	
Lane Departure Warning (LDW)	Low-pitched tone	Lane Departure Warning lamp	Cancel	,
Blind Spot Warning (BSW)	High-pitched tone	Blind Spot Warning lamp	Cancel	ŀ
Moving Object Detection (MOD)	Low-pitched tone	Warning lamp MOD icon (on camera screen)	Cancel	

## **DTC Inspection Priority Chart**

If multiple DTCs are detected simultaneously, check them one by one depending on the following DTC inspection priority chart.

Priority	Detected items (DTC)	
1	U1000: CAN COMM CIRCUIT     U1010: CONTROL UNIT (CAN)	N
2	U1305: CAMERA IMAGE CALIB     U1308: CAMERA CONFIG	DAS
3	<ul> <li>C1A39: STRG SEN CIR</li> <li>U0428: STRG SEN CAN CIR 2</li> <li>U111A: REAR CAMERA IMAGE SIGNAL</li> <li>U1232: ST ANGLE SEN CALIB</li> <li>U1309: PUMP UNIT CURRENT</li> <li>U130B: REAR CAMERA COMM ERROR</li> <li>U1310: PUMP UNIT CIRCUIT</li> </ul>	P
4	<ul> <li>C1A03: VHCL SPEED SE CIRC</li> <li>C1A04: VDC FAIL</li> <li>U0122: VDC P-RUN DIAG</li> <li>U0416: VDC CHECKSUM DIAG</li> </ul>	

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## **ITS CONTROL UNIT**

#### < ECU DIAGNOSIS INFORMATION >

#### **DTC Index**

[MOD]

#### NOTE:

- The details of time display are as follows:
- 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  $0 \rightarrow 1 \rightarrow 2 \cdots 38 \rightarrow 49$  after returning to the normal condition whenever the ignition switch OFF  $\rightarrow$  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.
  - Systems for fail-safe
  - A: Lane Departure Warning (LDW)
  - B: Blind Spot Warning (BSW)
  - C: Moving Object Detection (MOD)

DTC		١	Narning larr	р	Fail-safe	
CONSULT	CONSULT display	Lane Departure Warning	Blind Spot Warning	Moving Object Detection	System	Reference
C1A03	VHCL SPEED SE CIRC	ON	ON	ON	A, B, C	DAS-249
C1A04	VDC FAIL	ON	ON	ON	A, B, C	DAS-250
C1A39	STRG SEN CIR	ON	ON	ON	A, B, C	DAS-251
NO DTC IS DETECTED. FURTHER TESTING MAY BE RE- QUIRED	NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED	_	_	_	_	_
U0122	VDC P-RUN DIAG	ON	ON	ON	A, B, C	DAS-252
U0416	VDC CHECKSUM DIAG	ON	ON	ON	A, B, C	DAS-253
U0428	STRG SEN CAN CIR 2	ON	ON	ON	A, B, C	DAS-254
U1000 <sup>NOTE</sup>	CAN COMM CIRCUIT	ON	ON	ON	A, B, C	DAS-255
U1010	CONTROL UNIT (CAN)	ON	ON	ON	A, B, C	DAS-256
U111A	REAR CAMERA IMAGE SIGNAL	ON	ON	ON	A, B, C	<u>DAS-257</u>
U1232	ST ANGLE SEN CALIB	ON	ON	ON	A, B, C	DAS-259
U1305	CAMERA IMAGE CALIB	ON	ON	ON	A, B, C	DAS-260
U1308	CAMERA CONFIG	ON	ON	ON	A, B, C	DAS-261
U1309	PUMP UNIT CURRENT	ON	ON	ON	A, B, C	DAS-262
U130B	REAR CAMERA COMM ERROR	ON	ON	ON	A, B, C	DAS-265
U1310	PUMP UNIT CIRCUIT	ON	ON	ON	A, B, C	DAS-266

#### NOTE:

With the detection of "U1000" some systems do not perform the fail-safe operation.

## **ITS CONTROL UNIT**

#### < ECU DIAGNOSIS INFORMATION >

A system controlling based on a signal received from the control unit performs fail-safe operation when the communication with the ITS control unit becomes inoperable.

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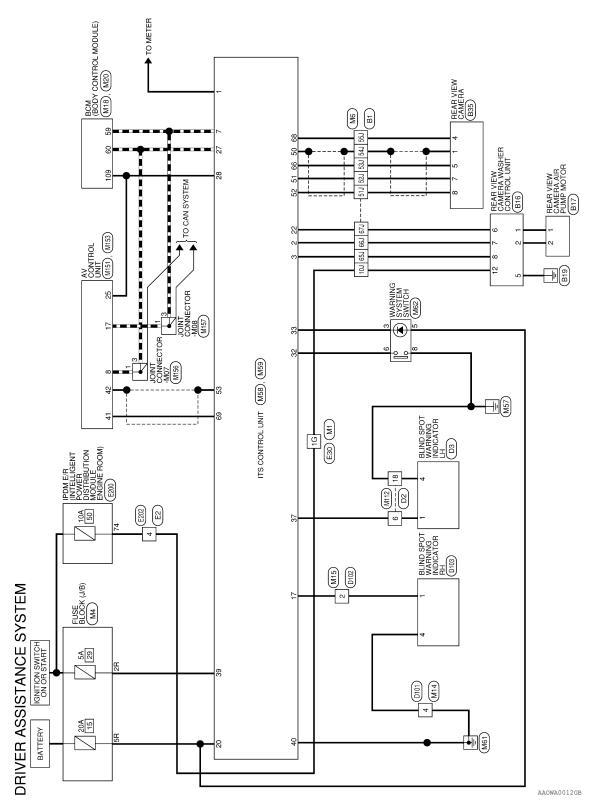
Р

[MOD]

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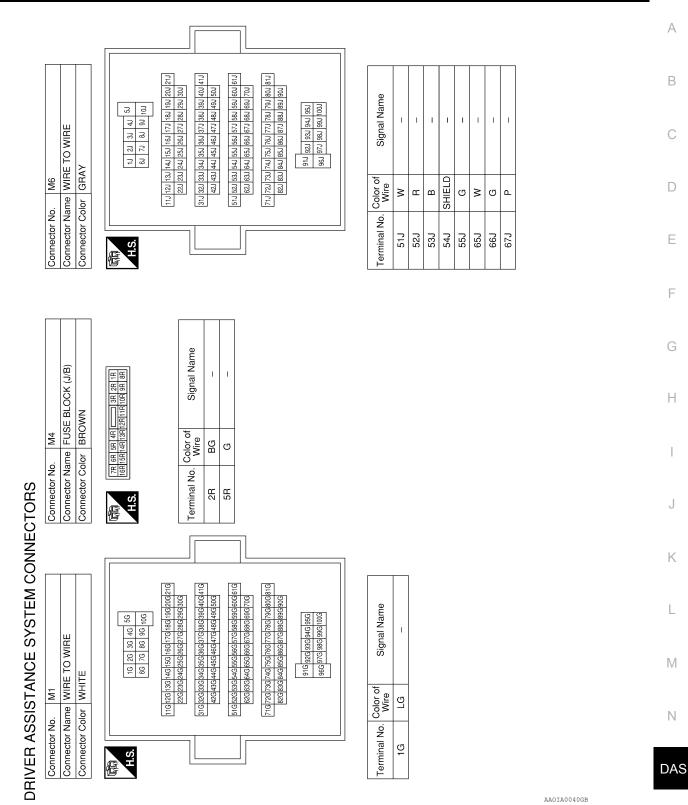
# WIRING DIAGRAM DRIVER ASSISTANCE SYSTEMS

# Wiring Diagram



## DRIVER ASSISTANCE SYSTEMS

< WIRING DIAGRAM >



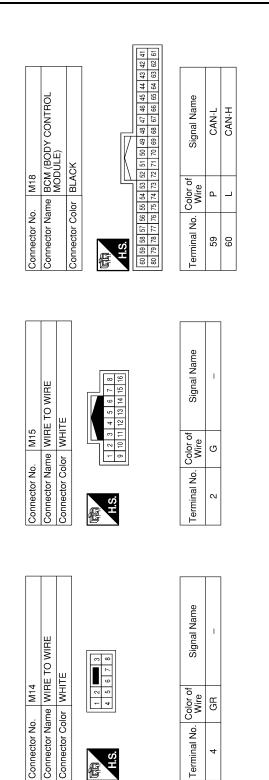
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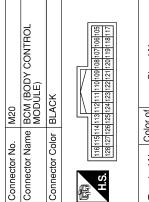
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< WIRING DIAGRAM >







Signal Name	REVERSE SIGNAL	
Color of Wire	G	
Terminal No.	109	

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I	I	I	I	1	I	I	I	1	SOW LED SIGNAL R	I	-	B+	1	SERIAL GND		Signal Name	1	1	I	I	I	RR CAM GND	RR CAM ON	I	I	I	1	1	1
1	I	I	1	ı	1	1	I	1	σ	I	-	G	1	٩		Color of		1	1	1	SHIELD	œ	M	SHIELD	I	1	1	1	1
∞	ი	10	11	12	13	14	15	16	17	18	19	20	21	22	2	Terminal No.	46	47	48	49	50	51	52	53	54	55	56	57	58
				9 8 7 6 5 4 3	40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21	Color of Signal Name	Wire	BR WASH LVL SW	G FROM PUMP TO CAMERA C/U	W FROM CAMERA		1	1	1						55 54 53 52 51 50 49 48 47 46 45 44 43 42 41	72 71 70 69 68 67 66 65 64 63 62 61 60 59 58 57		Color of Signal Name	Wire	1	1	1	1	1
	E		0:E	20 19 18 17 16 15	40 39 38 37 36	Terminal No.		-	0	~	2	4	5	9		Connector No.	Connector Name			56 56	с.П 72		Terminal No		41	42	43	44	45
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## **DRIVER ASSISTANCE SYSTEMS**

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Signal Name

Color of Wire

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CANCEL SW OUTPUT

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31 32 33

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LED INPUT

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#### < WIRING DIAGRAM >

Signal Name

Color of Wire

Terminal No.

Signal Name

Terminal No. Color of

CAN-L

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Connector Name ITS CONTROL UNIT Connector Color WHITE

Connector No. M58

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Revision: August 2012

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M112 WIRE TO WIRE WHITE	Signal Name									-M07			e	
0. M112 ame WIRE olor WHITT 2 3 4 5 14 15 16 17	Color of Wire	M	В							ame JOINT CONNECTOR-M07 olor WHITE			Color of Signal Name Wire	
Connector No. Connector Name Connector Color H.S.	Terminal No.	9	18						Connector No.	Connector Name Connector Color		H.S.	Terminal No.	
Connector No. M62 Connector Name WARNING SYSTEM SWITCH Connector Color WHITE	Color of Signal Name Wire	I	1	I	1 1	1	1	1	M153	AV CONTROL UNIT (WITH BOSE AUDIO SYSTEM - WITH NAVI)	WHITE	21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44	Color of Signal Name Wire	REVERSE

## DRIVER ASSISTANCE SYSTEMS

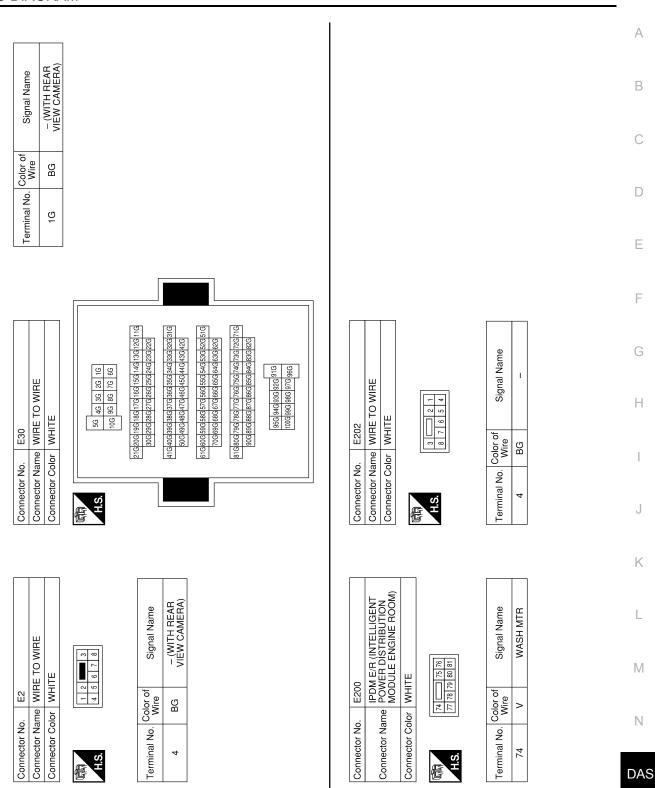
< WIRING DIAGRAM >

[MOD]



< WIRING DIAGRAM >

[MOD]



AAOIA0044GB

Connector No. D103 Connector Name BLIND SPOT WARNING INDICATOR RH

Connector Color WHITE

Signal Name

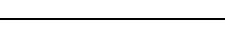
Mire B

Terminal No. 1 2 3 4

**DAS-238** 

. EHS.

< WIRING DIAGRAM >



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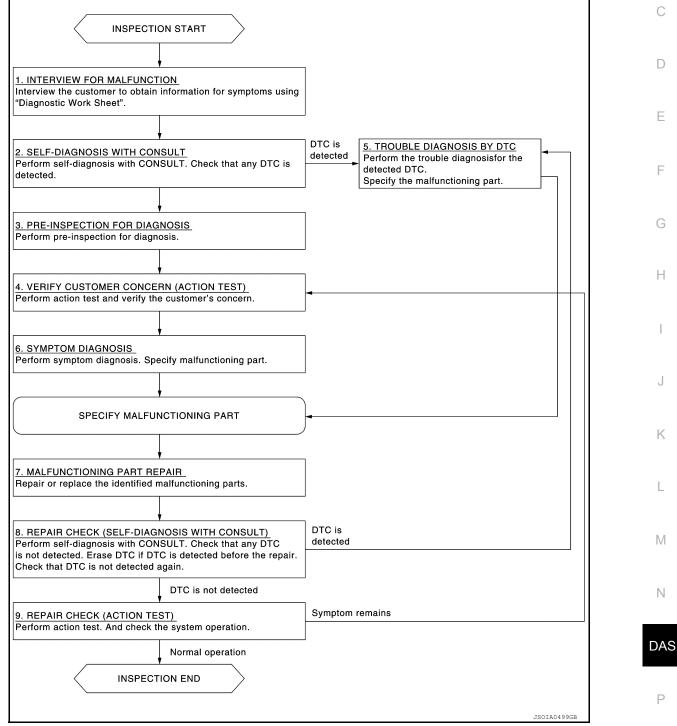
2013 Altima Sedan

# **BASIC INSPECTION** DIAGNOSIS AND REPAIR WORK FLOW

## Work Flow

#### INFOID:000000008842016 В

#### **OVERALL SEQUENCE**



## DETAILED FLOW

#### **1**.INTERVIEW FOR MALFUNCTION

Interview the customer to obtain information about symptoms using "Diagnostic Work Sheet". (Refer to DAS-240, "Diagnostic Work Sheet".)

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## DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

>> 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 "AVM".

Is any DTC detected?

YES >> GO TO 5.

NO >> GO TO 3.

**3.** PRE-INSPECTION FOR DIAGNOSIS

Perform pre-inspection for diagnosis. Refer to DAS-242, "Inspection Procedure".

>> GO TO 4.

#### **4**.ACTION TEST

Perform MOD system action test to check the operation status. Refer to DAS-243, "Description".

>> GO TO 6.

**5.**TROUBLE DIAGNOSIS BY DTC

Perform trouble diagnosis for the detected DTC. Specify a malfunctioning part. Refer to <u>DAS-20, "DTC Index"</u> (ITS CONTROL UNIT).

>> GO TO 7.

**6.**SYMPTOM DIAGNOSIS

Perform symptom diagnosis. Specify malfunctioning part. Refer to DAS-132, "Symptom Table".

>> GO TO 7.

7.MALFUNCTION PART REPAIR

Repair or replace the identified malfunctioning parts.

>> GO TO 8.

**8**.REPAIR CHECK (SELF-DIAGNOSIS WITH CONSULT)

Perform self-diagnosis with CONSULT. Check that any DTC is not detected. Erase DTC if DTC is detected before the repair. Check that DTC is not detected again.

Is any DTC detected?

YES >> GO TO 5. NO >> GO TO 9.

**9.**REPAIR CHECK (ACTION TEST)

Perform MOD system action test. Also check the system operation.

Does it operate normally?

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

Diagnostic Work Sheet

#### DESCRIPTION

In general, each customer feels differently about an incident. It is important to fully understand the symptoms or conditions for a customer complaint.

There are many operating conditions that lead to the malfunction. A good grasp of such conditions can make troubleshooting faster and more accurate.

Some conditions may cause the lane departure warning lamp to stay ON.

## **DAS-240**

INFOID:000000008842017

## DIAGNOSIS AND REPAIR WORK FLOW

#### < BASIC INSPECTION >

Utilize a work sheet sample to organize all of the information for troubleshooting.

KEY POINTS

- WHAT..... System and functions
- WHEN..... Date, Frequencies
- WHERE..... Road conditions
- HOW..... Operating conditions, Symptoms

#### WORK SHEET SAMPLE

Customer name MR/MS		Model and Year		VIN							
Engine #		Trans.		Mileage							
Incident Date		Manuf. Date		In Service Date							
Symptoms											
	Lane departure warning lamp	Stays ON     Turned ON occasionall	☐ Stays ly ☐ Other								
Indicator/Warning lamps	☐ Warning systems ON indicator	☐ Stays ON	☐ Stays OFF ☐ Blinks ☐ Others(								
	Other lamps ()	☐ Stays ON ☐ Turned ON occasionall	☐ Stays ly ☐ Othei								
	☐ When using MOD										
Functions	All functions do not operate. Warning function does not operate. (No sound No indicator) Yawing function does not operate. (Warning function is operated.)										
Functions	☐ Functions	g the course in the turn sign function when driving on lar s when driving in a lane. s in a different position from	ne markers.								
o											
Conditions											
Conditions Frequency	☐ Continuously	🗌 Intermitte	ently								
	Continuously Other Continuously Other Continuously In the daytime Direct light	☐ At night □ Backlight	-	sunset (Strong light)							
Frequency	☐ Not affected ☐ In the daytime	☐ At night ☐ Backlight	Sunrise/s								
Frequency Light conditions	Not affected In the daytime Direct light Not affected	☐ At night ☐ Backlight MPH ( km/h) ☐ Raining	□ Sunrise/s □ Others(								
Frequency Light conditions Driving conditions	Not affected In the daytime Direct light Not affected Vehicle speed Not affected Fine	At night Backlight MPH ( km/h) Raining In town	□ Sunrise/s □ Others ( □ Vehicle i: □ Snowing								
Frequency Light conditions Driving conditions Weather conditions	Not affected In the daytime Direct light Not affected Vehicle speed Not affected Fine Clouding Not affected Highway	At night Backlight MPH ( km/h) Raining In town Winding roads	□ Sunrise/s □ Others( □ Vehicle i: □ Snowing □ Others(								

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< BASIC INSPECTION >

## PRE-INSPECTION FOR DIAGNOSIS

**Inspection Procedure** 

INFOID:000000008842018

[MOD]

**1.**CHECK CAMERA LENS

Is camera lens contaminated with foreign materials?

YES >> Clean camera lens.

NO >> GO TO 2.

2. CHECK REAR VIEW CAMERA UNIT INSTALLATION CONDITION

Check rear view camera unit installation condition (installation position, properly fitted).

Is it properly installed?

YES >> GO TO 3.

NO >> Install rear view camera unit properly, and perform rear view camera calibration. Refer to <u>DAS-</u> <u>245. "Description"</u>.

3. CHECK VEHICLE HEIGHT

Check vehicle height. Refer to FSU-26, "Wheelarch Height (Unladen\*1)".

Is vehicle height appropriate?

YES >> Inspection End.

NO >> Repair vehicle to appropriate height.

## **ACTION TEST**

< BASIC INSPECTION >	
ACTION TEST	

ACTION ILS	)				А
Description			I.	NFOID:000000008945583	
<ul> <li>Perform action te</li> <li>Perform action te</li> <li>WARNING:</li> </ul>		ustomer's concern. system operation after sy	stem diagnosis.		В
Be careful of traff CAUTION:		id safety around the veh items well before the roa	icle when performing road test. Id test;		С
<ul> <li>System descrip</li> <li>System descrip</li> </ul>	tion for LDW: Re tion for BSW: Re	Precaution for LDW Sys efer to <u>DAS-74, "System</u> efer to <u>DAS-146, "System</u> efer to <u>DAS-219, "System</u>	<u>Description"</u> . <u>n Description"</u> .		D
			Lane Departure Warning".		Е
Inspection Pro	cedure		I.	NFOID:000000008842020	
WARNING: Be careful of traff CAUTION:	ic conditions an	nd safety around the veh	icle when performing road test.		F
<ul> <li>Fully understan</li> <li>Precautions: Re</li> </ul>	fer to DAS-70, "	items well before the roa <u>Precaution for LDW Sys</u> efer to <u>DAS-74, "System</u>	tem Service".		G
<ul> <li>System descrip</li> <li>System descrip</li> <li>Handling precat</li> </ul>	tion for BSW: Re tion for MOD: Re ution: Refer to D	efer to <u>DAS-146, "System</u> efer to <u>DAS-219, "System</u> AS-223, "Precautions fo	n Description".		Н
<b>1.</b> CHECK MOD S	YSTEM SETTIN	G			I
	MOD system se	tting can be enabled/disat d wait for 30 seconds or n	oled on the vehicle information disp	lay.	
4. Check that the	previous setting	is saved when the engine	starts again.		J
>> GO T(	) 2.				
2. ACTION TEST	FOR MOD				Κ
2. Turn warning s	systems switch O	system on the vehicle info N (warning systems ON ir ording to the following table	ndicator is ÓN).		L
Ve	hicle condition/ Drive	r's operation	Vehicle response		М
Moving Object De-	Vehicle speed (Approx.)	Status of vehicle detection	Indication on the Moving Object Detection	Buzzer	111

					IVI
Moving Object De- tection ON indicator	Vehicle speed (Approx.) [km/h (MPH)]	Status of vehicle detection within detection area	Indication on the Moving Object Detection indicator	Buzzer	NI
OFF	—	—	OFF	OFF	N
	Less than approx. 8 km/h (5 MPH)	Vehicle is detected	ON	ON	DAS
Blue		Vehicle is absent	ON	OFF	
	Approx. 8 km/h (5 MPH) or more	Vehicle is detected	ON	OFF	_
	,	Vehicle is not detected	ON	OFF	Р

#### NOTE:

After the operating conditions of warning are satisfied, the warning continues until the vehicle reaches a higher speed. Refer to <u>DAS-74</u>, "System Description".

>> Inspection End.

[MOD]

## ADDITIONAL SERVICE WHEN REPLACING REAR VIEW CAMERA

< BASIC INSPECTION >

## ADDITIONAL SERVICE WHEN REPLACING REAR VIEW CAMERA

## Description

Always perform the calibration after removing and installing or replacing the rear view camera. **CAUTION:** 

The system does not operate normally unless the rear view camera aiming adjustment is performed. Always perform it.

#### Work Procedure

INFOID:000000008842022

INFOID:000000008842021

[MOD]

### **1.**CAMERA AIMING ADJUSTMENT

Perform the camera aiming adjustment with CONSULT. Refer to DAS-245, "Description".

>> GO TO 2.

2.PERFORM SELF-DIAGNOSIS

Perform the self-diagnosis of rear view camera with CONSULT. Check if any DTC is detected.

Is any DTC detected?

YES >> Perform the trouble diagnosis for the detected DTC. Refer to <u>DAS-86, "DTC Index"</u>.

NO >> GO TO 3.

**3.**LDW/BSW SYSTEM ACTION TEST

- 1. Perform the LDW/BSW system action test. Refer to DAS-243. "Description".
- 2. Check that the LDW/BSW system operates normally.

Is the inspection result normal?

YES >> Inspection End.

NO >> GO TO 4.

**4.**LDW/BSW ACTIVE TEST

1. Perform WASH ACTIVE on Active Test using CONSULT.

2. Perform air and washer tube connection check by AIR & WASH ACTIVE on Active Test:

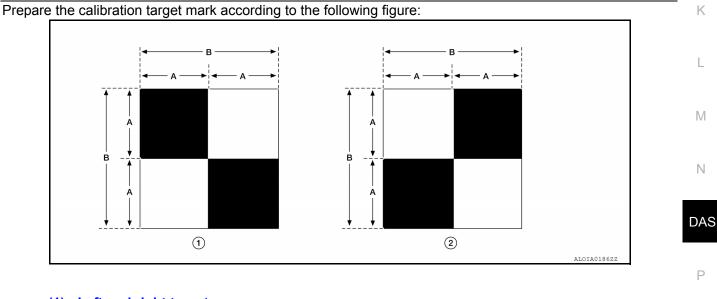
(1) Washer fluid output count on the rear view camera is 3 to 5 times  $\rightarrow$  OK

- (2) Washer fluid output count on the rear view camera is 10 times  $\rightarrow$  Check tube with yellow marking
- (3) Washer fluid output count on the rear view camera is 1 time  $\rightarrow$  Check tube with green marking

(4) No washer fluid output  $\rightarrow$  Check tube with blue marking or check valve

>> Inspection End.

< BASIC INSPECTION > [MOD]
REAR VIEW CAMERA CALIBRATION
Description
<ul> <li>Always perform the calibration after removing and installing or replacing the rear view camera.</li> <li>CAUTION:</li> <li>Place the vehicle on level ground when the calibration is performed.</li> <li>Follow the CONSULT when performing the calibration. (Rear view camera calibration cannot be</li> </ul>
operated without CONSULT).
Work Procedure (Preparation)
1.PERFORM SELF-DIAGNOSIS
Perform self-diagnosis of the ITS control unit. Is any DTC detected?
Except "U1308">> Perform diagnosis on the detected DTC and repair or replace the applicable item. Refer to <u>DAS-86, "DTC Index"</u> . "U1308" or no DTC>> GO TO 2.
2. PREPARATION BEFORE REAR VIEW CAMERA CALIBRATION
<b>NOTE:</b> Select the "AVM" to diagnose the ITS control unit by CONSULT. 1. Perform pre-inspection for diagnosis. Refer to <u>DAS-242</u> , "Inspection Procedure".
<ol> <li>Adjust the tire pressure to the specified pressure value.</li> <li>Maintain no-load in vehicle.</li> <li>Check if coolant and engine oil are filled up to correct level and fuel tank is full.</li> <li>Situate vehicle where the camera is exposed at an atmosphere temperature between 0°C (32°F) and 20°C (46°F).</li> </ol>
<ul> <li>30°C (86°F)</li> <li>6. Move the shift selector to P (Park) and release the parking brake.</li> <li>7. Clean the rear view camera.</li> </ul>
>> GO TO 3.
3. PREPARATION OF CALIBRATION TARGET MARK
Prepare the calibration target mark according to the following figure:



- (1) : Left and right targets
- (2) : Center target
- (A) : Side of the black or white area = 200 mm (7.87 in)
- (B) : Side of the square target
- = 400 mm (15.75 in)

< BASIC INSPECTION >

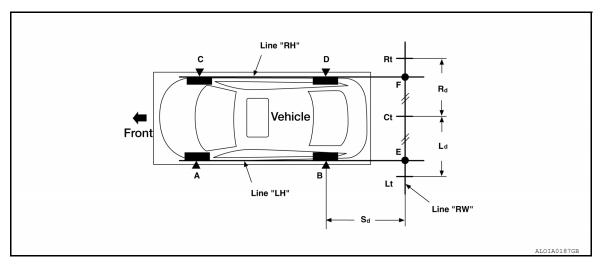
>> Refer to DAS-246. "Work Procedure (Target Setting)".

Work Procedure (Target Setting)

#### CAUTION:

- Perform this operation in a horizontal position where there is a clear view for 3 m (9.84 ft) backward and 4 m (13.12 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 it shines by the reflected light of the sun or lighting.
- The target may not be detected when there is the same pattern of black and white as the target when the pattern is within 0.5 m (1.64 ft) from either side and upward/downward position from the target. (It is desirable that the vehicle is positioned on a single-color floor.)

**1**.TARGET SETTING



Side distance (Sd): "B" – "E" ("D" – "F") 2125 mm (83.66 in) : Left distance (Ld): "Ct" – "Lt" : 1500 mm (59.06 in)

Right distance (Rd): "Ct" – "Rt" : 1500 mm (59.06 in)

1. Mark points "A", "B", "C" and "D" at the center of the lateral surface of each wheel.

#### NOTE:

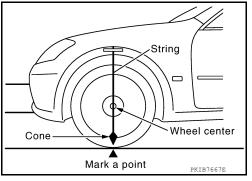
Hang a string with a cone from the fender so as to pass through the center of wheel, and then mark a point at the center of the lateral surface of the wheel.

2. Draw line "LH" passing through points "A" and "B" on the left side of vehicle.

#### NOTE:

Approximately 2.2 m (7.22 ft) or more at the rear from the rear axle.

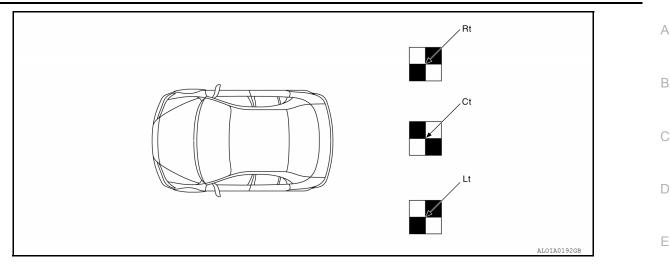
- 3. Mark point "E" on the line "LH" at the positions 2125 mm (83.66 in) from point "B".
- 4. Draw line "RH" passing through points "C" and "D" on the right side of vehicle in the same way as step 2.
- Mark point "F" on the line "RH" at the positions 2125 mm (83.66 in) from point "D".
   Draw line "RW" passing through the points "E" and "F" on the rear of the vehicle.
- NOTE:
- Approximately 1.8 m (5.91 ft) or more at both left and right sides from vehicle center. 7. Mark point "Ct" at the center of point "E" and "F" on the line "RW".
- Mark point "Ct" at the center of point "E" and "F" on the line "R\ CAUTION: Make sure that "E" to "Ct" is equal to "F" to "Ct".
- 8. Mark point "Lt" and "Rt" on the line "RW" at the positions 1500 mm (59.06 in) from point "Ct".
- Position the center of the target mark to point of "Ct".



## **DAS-246**

INFOID:000000008842025

#### < BASIC INSPECTION >



#### **CAUTION:**

Make sure that the black/white pattern of the center target is rotated as compared with the left and right targets.

>> Go to DAS-247, "Work Procedure (Rear View Camera Calibration)".

Work Procedure (Rear View Camera Calibration)

INFOID:000000008842026

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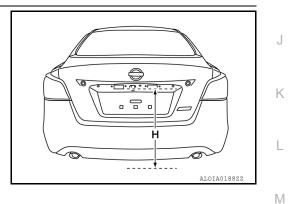
#### CAUTION:

Perform the calibration under the specified vehicle condition (fuel full, no-load, specified tire pressure, etc.). Refer to <u>DAS-245</u>, "Work Procedure (Preparation)".

**1.**CHECK REAR VIEW CAMERA HEIGHT

Measure the rear view camera height "H".

>> GO TO 2.



# 2. REAR VIEW CAMERA CALIBRATION

- 1. Select "Work Support" on "AVM" with CONSULT.
- 2. Select "REAR CAMERA ITS".
- 3. Select "OK".
- 4. Input the rear view camera height "H", and then touch "APPLY".
- 5. Confirm that the same value is displayed on the center display.
- 6. Confirm the following items:
- The target should be accurately placed.
- The vehicle should be stopped.
- The vehicle should be under the specified vehicle condition.
- 7. Select "Start" to perform calibration.
  - CAUTION:
  - Perform the calibration after the ignition or engine has been kept on for at least 10 minutes to stabilize camera.
  - Operate CONSULT outside the vehicle, and close all doors to retain appropriate vehicle altitude.
- 8. Confirm the displayed item.
- "Completed": Select "Completion".
- Otherwise, perform the following services:

## **DAS-247**

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#### < BASIC INSPECTION >

Displaye	ed item	Possible cause	Service procedure	
	_	Temporary malfunction in internal processing of the rear view camera.	Go back to Step 1	
SUSPENSION	00H Routine not ac- tivated	Rear view camera unit malfunction.	Position the target appro- priately again. Perform	
	10H Writing error	<ul> <li>Temporary malfunction in internal processing of the rear view camera.</li> <li>Rear view camera malfunction.</li> </ul>	the aiming again. Refer to <u>DAS-246, "Work Pro-</u> cedure (Target Setting)".	
X AIMING NG Y (X: 0 - 7, Y: 1 - 8)	_	<ul> <li>A target is not-yet-placed.</li> <li>(The rear view camera cannot detect a target.)</li> </ul>	Position the target appro- priately again. Perform	
ABNORMALLY COM- PLETED	_	<ul><li>The position of the rear view camera is not correct.</li><li>Inappropriate work environment.</li><li>Inappropriate vehicle condition.</li></ul>	the aiming again. Refer to <u>DAS-245, "Work Pro-</u> <u>cedure (Preparation)"</u> .	

#### NOTE:

Replace camera unit if "00H Routine not activated" or "10H Writing error" are repeatedly indicated during the above two services are performed.

9. Confirm that "Completed" is displayed and then select "End" to close the calibration procedure.

>> GO TO 3.

**3.**PERFORM SELF-DIAGNOSIS

Perform self-diagnosis of ITS control unit with CONSULT.

Is any DTC detected?

YES >> Perform diagnosis on the detected DTC and repair or replace the applicable item. Refer to DAS-<u>20, "DTC Index"</u>. >> GO TO 4.

NO

**4.**ACTION TEST

Test the system operation by action test. Refer to DAS-243. "Description".

>> Work End.

# DTC/CIRCUIT DIAGNOSIS C1A03 VEHICLE SPEED SENSOR

## DTC Logic

## DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes	
C1A03	VHCL SPEED SEN CIRC	ITS control unit detects that the result of calculation about velocity has error.	<ul> <li>ABS actuator and electric unit (control unit)</li> <li>ITS control unit</li> </ul>	
DTC CONFI	RMATION PROC	EDURE		
1.PERFORM	M DTC CONFIRMA	TION PROCEDURE		
3. Check if	All DTC Reading" ۱ the "C1A03" is dete	cted as the current malfunction in "Self I	Diagnostic Result" of "AVM".	
Is "C1A03" detected as the current malfunction?         YES       >> Refer to DAS-249, "Diagnosis Procedure".         NO       >> Refer to GI-47, "Intermittent Incident".				
Diagnosis Procedure			INFOID:00000008841938	
<b>1.</b> CHECK A	BS ACTUATOR AN	D ELECTRIC UNIT (CONTROL UNIT)	SELF-DIAGNOSIS RESULTS	
		"Self Diagnostic Result" of "ABS".		
<u>Is any DTC d</u>				
<u>E</u>	BRC-44, "DTC Index"			
2.CHECK A	LL UNIT SELF-DIA	NOSIS RESULTS		
Check if any DTC is detected except for ITS control unit about VDC in "ALL DTC READING" with CONSULT.				
	etected except for I			
	i <u>on"</u> . Replace ITS control	unit. Refer to DAS-66. "Removal and In	stallation - ITS Control Unit".	

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## C1A04 ABS/TCS/VDC SYSTEM

#### < DTC/CIRCUIT DIAGNOSIS >

## C1A04 ABS/TCS/VDC SYSTEM

## DTC Logic

INFOID:000000008841941

[MOD]

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
C1A04	VDC CIRCUIT	ITS control unit receives the message that means "VDC is failed" from ABS actuator and electric unit (control unit).	<ul> <li>ABS actuator and electric unit (control unit)</li> <li>ITS control unit</li> </ul>

#### DTC CONFIRMATION PROCEDURE

# 1.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition ON.
- 2. Perform "All DTC Reading" with CONSULT.
- 3. Check if the "C1A04" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".
- Is "C1A04" detected as the current malfunction?
- YES >> Refer to DAS-249, "Diagnosis Procedure".
- NO >> Inspection End.

## Diagnosis Procedure

INFOID:000000008841942

## 1. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) SELF-DIAGNOSIS RESULTS

Check if any DTC is detected in "Self Diagnostic Result" of "ABS".

#### Is any DTC detected?

YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. Refer to BRC-44, "DTC Index".

NO >> GO TO 2.

## 2. CHECK ALL UNIT SELF-DIANOSIS RESULTS

Check if any DTC is detected except for ITS control unit about VDC in "ALL DTC READING" with CONSULT. Is any DTC detected?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-123</u>, "<u>Removal and Installa-</u> tion".
- NO >> Replace ITS control unit. Refer to DAS-66, "Removal and Installation ITS Control Unit".

## C1A39 STEERING ANGLE SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

DTC DETECTION LOGIC

# C1A39 STEERING ANGLE SENSOR

# DTC Logic

## DAS-251

[MOD]
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INFOID:000000008841945

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes	
C1A39	STRG SEN CIR	ITS control unit receives the message that means "Steering angle sensor is failed" from steering angle sensor.	<ul><li>Steering angle sensor</li><li>ITS control unit</li></ul>	
DTC CONFI	RMATION PROCEDU	JRE		
1.PERFORM	I DTC CONFIRMATION	N PROCEDURE		
<ol><li>Check if t</li></ol>	All DTC Reading" with the "C1A39" is detected	as the current malfunction in "Self Dia	agnostic Result" of "AVM".	
YES >> R	etected as the current m refer to <u>DAS-249, "Diag</u> refer to <u>GI-47, "Intermitt</u>	nosis Procedure".		
Diagnosis Procedure				
<b>1.</b> снеск s <sup>-</sup>	TRG SENSOR SELF-D	IAGNOSIS RESULTS		
Check if any DTC is detected in "Self Diagnostic Result" of "ABS".				
<u>Is any DTC de</u>				
YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. Refer to <u>BRC-44, "DTC Index"</u> .				
•	60 TO 2.			
	L UNIT SELF-DIANOS			
•	DTC is detected except etected except for ITS?	for ITS control unit about ABS in "ALL	DTC READING" with CONSULT.	
		ensor. Refer to <u>BRC-127, "Removal a</u> . Refer to <u>DAS-66, "Removal and Insta</u>		

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## **U0122 VDC P-RUN DIAG**

#### < DTC/CIRCUIT DIAGNOSIS >

## U0122 VDC P-RUN DIAG

## DTC Logic

[MOD]

INFOID:000000008841949

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U0122	VDC P-RUN DIAG	ITS control unit receives the incorrect signal about P-RUN from VDC via V-CAN communication	ABS actuator and electric unit (control unit)

## DTC CONFIRMATION PROCEDURE

# 1.PERFORM DTC CONFIRMATION PROCEDURE

#### 1. Turn ignition ON.

- 2. Perform "All DTC Reading" with CONSULT.
- 3. Check if the "U0122" is detected as the current malfunction in self-diagnosis results of "AVM".

#### Is "U0122" detected as the current malfunction?

- YES >> Refer to DAS-252, "Diagnosis Procedure".
- NO >> Refer to GI-47, "Intermittent Incident".

## **Diagnosis** Procedure

INFOID:000000008841950

# 1. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) SELF-DIAGNOSIS RESULTS

Check if any DTC is detected in "Self Diagnostic Result" of "ABS".

#### Is any DTC detected?

- YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.
- NO >> GO TO 2.

# 2. CHECK ITS CONTROL UNIT SELF-DIAGNOSIS RESULTS

Check if any DTC is detected in "Self Diagnostic Result" of "ABS".

#### Is any DTC detected?

- YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts.
- NO >> Replace the ABS actuator and electric unit (control unit). Refer to <u>BRC-123</u>, "<u>Removal and Instal-</u> lation".

#### **U0416 VDC CHECKSUM DIAG**

#### < DTC/CIRCUIT DIAGNOSIS >

U0416 VDC CHECKSUM DIAG

#### DTC Logic

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[MOD]

INFOID:000000008841953

#### DTC DETECTION LOGIC В DTC DTC detecting condition Possible causes Trouble diagnosis name ITS control unit receives the incorrect signal VDC CHECKSUM ABS actuator and electric unit (control U0416 about P-RUN from VDC via V-CAN communi-DIAG unit) cation D DTC CONFIRMATION PROCEDURE **1.**PERFORM DTC CONFIRMATION PROCEDURE Е 1. Turn ignition ON. Perform "All DTC Reading" with CONSULT. 2. Check if the "U0416" is detected as the current malfunction in self-diagnosis results of "AVM". 3. Is "U0416" detected as the current malfunction? F >> Refer to DAS-252, "Diagnosis Procedure". YES >> Refer to GI-47, "Intermittent Incident". NO **Diagnosis** Procedure INFOID 000000008841954 1.CHECK VDC UNIT SELF-DIAGNOSIS RESULTS Н Check if any DTC is detected in "Self Diagnostic Result" of "ABS". Is any DTC detected? YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. NO >> GO TO 2. 2.check abs actuator and electric unit (control unit) self-diagnosis results Check if any DTC is detected in "Self Diagnostic Result" of "ABS". Is any DTC detected? YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. Κ NO >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-123, "Removal and Installation". L

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#### **U0428 STEERING ANGLE SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

### U0428 STEERING ANGLE SENSOR

#### DTC Logic

INFOID:000000008841956

[MOD]

DTC	Display contents of CONSULT	DTC detection condition	Possible malfunction factor
U0428	ST ANGLE SENSOR CALIBRATION [U0428]	The neutral position adjustment of the steering angle sensor is incomplete.	Adjust neutral position of the steering angle sensor.

#### **Diagnosis** Procedure

INFOID:000000008841957

1. ADJUST THE NEUTRAL POSITION OF THE STEERING ANGLE SENSOR

When U1232 is detected, adjust the neutral position of the steering angle sensor.

>> Perform adjustment of the neutral position of the steering angle sensor. Refer to <u>BRC-33, "CON-</u> <u>SULT Function (ABS)"</u>.

### **U1000 CAN COMM CIRCUIT**

#### < DTC/CIRCUIT DIAGNOSIS >

### U1000 CAN COMM CIRCUIT

### Description

#### CAN COMMUNICATION

CAN (Controller Area Network) is a serial communication line for real time applications. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Modern vehicle is equipped with many electronic control units, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN-H, CAN-L) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads the required data only. CAN communication signal chart. Refer to LAN-32, "CAN COMMUNICATION SYSTEM : CAN Communication lines in the selectively reads the required data only.

#### 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.

### DTC Logic

INFOID:000000008841959

INFOID:000000008841960

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes	-
U1000	CAN COMM CIRCUIT	If ITS control unit is not transmitting or receiving CAN communication signal or ITS communica- tion signal for 2 seconds or more	<ul><li>CAN communication system</li><li>ITS communication system</li></ul>	ŀ

#### NOTE:

If "U1000" is detected, first diagnose the CAN communication system.

#### Diagnosis Procedure

### **1.**PERFORM THE SELF-DIAGNOSIS

- 1. Turn the ignition switch ON.
- 2. Turn the MAIN switch of ITS system ON, and then wait for 30 seconds or more.
- 3. Perform "All DTC Reading" with CONSULT.
- 4. Check if the "U1000" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".

#### Is "U1000" detected as the current malfunction?

- YES >> Refer to <u>DAS-46</u>, "Description".
- NO >> Refer to GI-47, "Intermittent Incident".

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INFOID:00000008841958

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#### < DTC/CIRCUIT DIAGNOSIS >

### U1010 CONTROL UNIT (CAN)

#### Description

CAN controller controls the communication of CAN communication signal and ITS communication signal, and the error detection.

#### DTC Logic

INFOID:000000008841962

INFOID:000000008841961

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes	
U1010	CONTROL UNIT (CAN)	If ITS control unit detects malfunction by CAN controller initial diagnosis	ITS control unit	

#### **Diagnosis** Procedure

INFOID:000000008841963

### 1.PERFORM DTC CONFIRMATION PROCEDURE

1. Turn the MAIN switch of ITS system ON.

2. Perform "All DTC Reading" with CONSULT.

3. Check if the "U1010" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".

#### Is "U1010" detected as the current malfunction?

YES >> Replace the ITS control unit. Refer to <u>DAS-66, "Removal and Installation - ITS Control Unit"</u>.

NO >> Inspection End.

### **U111A REAR CAMERA IMAGE SIGNAL CIRCUIT**

< DTC/CIRCUIT DIAGNOSIS >

### **U111A REAR CAMERA IMAGE SIGNAL CIRCUIT**

[MOD]

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						INFOID:00000008841965
IC DETE	CTION LO	JIC				
DTC		e diagnosis ame		DTC dete	ecting condition	Possible causes
U111A	REAR CA AGE SIG	Mera im- Nal	Rear can shorted	Rear camera image signal circuit is open or shorted		r Check rear camera image signal circuit between rear camera and around view monitor control unit.
iagnosis	Procedu	re				INFOID:00000008841966
Regarding W	/iring Diagra	im informat	tion, refer	to <u>DAS-2</u>	2. "Wiring Diagra	<u>m"</u> .
			AMERA F	POWER S	UPPLY AND GRO	OUND CIRCUIT
2. Disconn	ignition swi ect the ITS o or continuity	control unit	connecto FS contro	or and rea I unit harr	r camera connect ness connector an	or. d rear camera harness connector.
ITS	6 control unit		Rear C	Camera		_
Connector	Tern	ninal C	Connector	Terminal	Continuity	
M59	5	2	B35	7	Yes	
I. Check for	or continuity	between I	rs contro	l unit harr	ness connector an	d ground.
Connector	S control unit	ninal	Ground	Contir	nuity	
M59		2	Cround	No	)	
s the inspec	tion result n					
	GO TO 2.					
	Repair the h					
	the ITS cor ignition swi		nnector a	and rear c	amera connector.	
			ntrol unit	harness o	connector and gro	und.
	Terminal					
(+			Con	dition	Voltage (Approx.)	
ITS con		(-)			(, ippi ox.)	
Connector	Terminal			<b>ΡΔ</b> "		
M59	52	Ground	"CAME switch is shift sel in R (Re	s ON or ector is	6.2 V	

>> GO TO 3. YES

>> Replace ITS control unit. Refer to DAS-66, "Removal and Installation - ITS Control Unit". NO

### **U111A REAR CAMERA IMAGE SIGNAL CIRCUIT**

#### < DTC/CIRCUIT DIAGNOSIS >

# $\overline{\mathbf{3.}}$ CHECK CONTINUITY REAR CAMERA IMAGE SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect the ITS control unit connector and rear camera connector.
- 3. Check for continuity between ITS control unit harness connector and rear camera harness connector.

ITS cor	ntrol unit	Rear View	w Camera	Continuity
Connector	Terminal	Connector	Terminal	Continuity
M59	50	B35	1	Yes
1039	66	000	5	165

4. Check for continuity between ITS control unit harness connector and ground.

ITS cor	ntrol unit		Continuity
Connector	Terminal	Ground	Continuity
M59	50	Ground	No
wi09	66		NU

Is inspection result normal?

YES >> GO TO 4.

NO >> Repair harness or connector.

#### **4.**CHECK REAR CAMERA IMAGE SIGNAL

- 1. Connect the ITS control unit connector and rear camera connector.
- 2. Turn the ignition switch ON.

3. Using an oscilloscope, check voltage between ITS control unit harness connector terminals.

	Terminal					
(-	+)	(-	-)	Condition	Voltage	
ITS control unit				Condition	(Approx.)	
Connector	Terminal	Connector	Terminal	-		
M59	66	M59	50	"CAMERA" switch is ON or shift selector is in R (Reverse)	(V) 1 0 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1	

Is inspection result normal?

YES >> Replace ITS control unit. Refer to DAS-66, "Removal and Installation - ITS Control Unit".

NO >> Replace rear view camera. Refer to DAS-139, "Removal and Installation".

#### **U1232 STEERING ANGLE SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

### U1232 STEERING ANGLE SENSOR

### DTC Logic

				B
DTC	Display contents of CONSULT	DTC detection condition	Possible malfunction factor	
U1232	ST ANGLE SEN CALIB	The neutral position registration of the steering angle sensor cannot finish.	<ul><li>Steering angle sensor</li><li>ITS control unit</li></ul>	С
Diagn	osis Procedure		INFOID:00000008841969	
1.reg	SISTER THE NEUTRA	L POSITION OF THE STEERING ANGLE SEN	SOR	D
2. Per <u>Fur</u>	nction (AVM)".	e neutral position of the steering angle sensor		E
<u>ls "ST A</u> YES	ANGLE SEN CALIB" d >> GO TO 2.	esult" of "AVM" with CONSULT. Refer to <u>DAS-22</u> etected?	24, "CONSULT Function (AVM)".	F
NO <b>2.</b> сне	>> Inspection End. CK STEERING ANGL	E SENSOR		G
		I? rol unit. Refer to <u>DAS-66, "Removal and Installa</u> malfunctioning parts.	ition - ITS Control Unit".	Н
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INFOID:00000008841968

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#### U1305 CAMERA IMAGE CALIB

#### < DTC/CIRCUIT DIAGNOSIS >

### U1305 CAMERA IMAGE CALIB

#### DTC Logic

INFOID:00000008841970

[MOD]

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U1305	CAMERA CONFIG	ITS control unit configuration is incomplete	Perform ITS configuration with CONSULT

#### **Diagnosis** Procedure

INFOID:000000008841971

### 1. CHECK SELF-DIAGNOSIS RESULTS

Check if "U1305" is current in "Self Diagnostic Result" of "AVM".

#### Is "U1305" detected?

- YES >> Perform ITS configuration using CONSULT. Refer to <u>DAS-224, "CONSULT Function (AVM)"</u>. If problem persists, repair or replace the malfunctioning part.
- NO >> Refer to <u>GI-47. "Intermittent Incident"</u>.

#### **U1308 CAMERA CONFIG**

### < DTC/CIRCUIT DIAGNOSIS > U1308 CAMERA CONFIG

### DTC Logic

### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U1308	ITS CALIB [U1308]	ITS control unit calibration is incomplete	Perform ITS calibration with CONSULT
Diagnosis	Procedure		INFOID:00000008841973
	ELF-DIAGNOSIS RES		
		Diagnostic Result" of "AVM".	
<u>ls "U1308" de</u>			
YES >> F	Perform ITS calibration	of camera image using CONSULT.	Refer to DAS-224, "CONSULT Func-
NO >> F	<u>ion (AVM)"</u> . Refer to <u>GI-47, "Intermit</u>	ttent Incident"	
		lient incluent.	

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#### **U1309 PUMP UNIT CURRENT**

#### < DTC/CIRCUIT DIAGNOSIS >

### **U1309 PUMP UNIT CURRENT**

#### DTC Logic

INFOID:000000008841976

[MOD]

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U1309	PUMP UNIT CURRENT	ITS control unit detects the value of current from pump control unit is incorrect	<ul> <li>Rear view camera washer control unit</li> <li>Harness</li> <li>ITS control unit</li> </ul>

#### DTC CONFIRMATION PROCEDURE

### 1.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- 2. Perform "All DTC Reading" with CONSULT.
- 3. Check if the "U1309" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".
- Is "U1309" detected as the current malfunction?
- YES >> Refer to DAS-262, "Diagnosis Procedure".
- NO >> Inspection End.

#### **Diagnosis** Procedure

INFOID:000000008841977

Regarding Wiring Diagram information, refer to DAS-22, "Wiring Diagram".

### 1. CHECK REAR VIEW CAMERA AIR PUMP MOTOR POWER SUPPLY CIRCUIT

1. Disconnect the rear view camera washer control unit connector.

2. Turn the ignition switch ON.

3. Check voltage between rear view camera washer control unit connector and ground.

	Terminal			
(	+)			Voltage
Rear view camera washer control unit		(-)	Condition	(Approx.)
Connector Terminal				
B16	B16 12		Ignition ON	12 V

Is inspection result normal?

YES >> GO TO 2.

NO >> Repair the harness or connector.

#### 2.CHECK REAR VIEW CAMERA AIR PUMP MOTOR GROUND CIRCUIT

- 1. Turn the ignition switch OFF.
- 2. Check for continuity between rear view camera washer control unit connector and ground.

Rear view camera	washer control unit		Continuity
Connector	Terminal	Ground	Continuity
B16	5		Yes

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the harness or connector.

3. CHECK CONTINUITY ITS CONTROL UNIT TO REAR VIEW CAMERA WASHER CONTROL UNIT

1. Disconnect the ITS control unit connector.

#### **DAS-262**

### **U1309 PUMP UNIT CURRENT**

#### < DTC/CIRCUIT DIAGNOSIS >

2. Check for continuity between ITS control unit harness connector and rear view camera washer control unit connector.

ITS control unit         Connector       Terminal         M58       2         3       3         spection result normal?       3         S       >> GO TO 4.         >       >> Repair the harness of         CHECK CONTINUITY REAR V       Disconnect rear view camera         Check for continuity between       Ar view camera washer control unit         Connector       Terminal         B16       1         2       Check for continuity between         ar view camera washer control unit       2         Check for continuity between       1         ar view camera washer control unit       1         Connector       Terminal         1       1         2       Check for continuity between	Ground or connector VIEW CAM a air pump con rear view ca pump motor Connector B17	Continuity No r. IERA WASH connector. camera wash mera air Terminal 1 2	IER CONTROL her control unit Continuity Yes	L UNIT TO PUMP t connector and pump connector.
M58 $-$ ITS control unitConnectorITS control unitConnectorTerminalM582M583spection result normal?SSSSSSCHECK CONTINUITY REARDisconnect rear view cameraCheck for continuity betweenar view camera washer control unitConnectorTerminalB162Check for continuity betweenar view camera washer control unitConnectorTerminal111	Ground Ground or connector VIEW CAM a air pump con rear view ca pump motor Connector B17	8 I unit harnes Continuit No IERA WASH Connector. Camera wash mera air Terminal 1 2	IER CONTROL her control unit Continuity Yes	L UNIT TO PUMP t connector and pump connector.
3         ITS control unit         ITS control unit         Connector Terminal         M58       2         3       3         spection result normal?         S       >> GO TO 4.         >> Repair the harness of         CHECK CONTINUITY REAR V         Disconnect rear view camera         Check for continuity between         ar view camera washer control unit         Connector       Terminal         B16       1         2       Check for continuity between         ar view camera washer control unit       2         Check for continuity between       1         ar view camera washer control unit       1         B16       2         Check for continuity between       1         ar view camera washer control unit       1         Connector       Terminal         1       1	Ground Ground or connector VIEW CAM a air pump con rear view ca pump motor Connector B17	I unit harnes Continuity No r. IERA WASH connector. camera wash mera air Terminal 1 2	IER CONTROL her control unit Continuity Yes	L UNIT TO PUMP t connector and pump connector.
ConnectorTerminalM5823spection result normal?S>> GO TO 4.>> Repair the harness ofCHECK CONTINUITY REAR VDisconnect rear view cameraCheck for continuity betweenar view camera washer control unitConnectorTerminalB1612Check for continuity betweenar view camera washer control unitConnectorTerminal11111111111111	Ground or connector VIEW CAM a air pump con rear view ca pump motor Connector B17	Continuity No r. IERA WASH connector. camera wash mera air Terminal 1 2	IER CONTROL her control unit Continuity Yes	L UNIT TO PUMP t connector and pump connector.
ConnectorTerminalM5823spection result normal?S>> GO TO 4.>> Repair the harness ofCHECK CONTINUITY REAR VDisconnect rear view cameraCheck for continuity betweenar view camera washer control unitConnectorTerminalB1612Check for continuity betweenar view camera washer control unitConnectorTerminal11111111111111	or connector VIEW CAM a air pump con rear view can pump motor Connector B17	No IERA WASH connector. camera wash mera air Terminal 1 2	IER CONTROL her control unit Continuity Yes	t connector and pump connector.
ConnectorTerminalM5823spection result normal?S>> GO TO 4.>> Repair the harness ofCHECK CONTINUITY REAR VDisconnect rear view cameraCheck for continuity betweenar view camera washer control unitConnectorTerminalB1612Check for continuity betweenar view camera washer control unitConnectorTerminal11111111111111	or connector VIEW CAM a air pump con rear view can pump motor Connector B17	No IERA WASH connector. camera wash mera air Terminal 1 2	IER CONTROL her control unit Continuity Yes	t connector and pump connector.
M58       2         3       3         spection result normal?         S       >> GO TO 4.         >> Repair the harness of         CHECK CONTINUITY REAR         Disconnect rear view camera         Check for continuity between         ar view camera washer control unit         Connector       Terminal         B16       1         2       Check for continuity between         ar view camera washer control unit       2         Check for continuity between       1         ar view camera washer control unit       1         Disconnect rear washer control unit       1         Ar view camera washer control unit       1	or connector VIEW CAM a air pump con rear view can pump motor Connector B17	No IERA WASH connector. camera wash mera air Terminal 1 2	IER CONTROL her control unit Continuity Yes	t connector and pump connector.
M58       3         spection result normal?         S       >> GO TO 4.         S       >> Repair the harness of the harness of the continuity result of the harness of the control unit?         Check for continuity between         ar view camera washer control unit         Connector       Terminal         B16       1         Check for continuity between         ar view camera washer control unit         Connector       Terminal         B16       1         Check for continuity between         ar view camera washer control unit         Connector       Terminal         1       1         1       1         1       1	VIEW CAM a air pump o rear view o Rear view ca pump motor Connector B17	r. IERA WASH connector. camera wasł mera air Terminal 1 2	her control unit Continuity Yes	t connector and pump connector.
spection result normal?         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         CHECK CONTINUITY REAR         Disconnect rear view camera         Check for continuity between         ar view camera washer control unit         B16         1         2         Check for continuity between         ar view camera washer control unit         Connector         Terminal         1         1         1	VIEW CAM a air pump o rear view o Rear view ca pump motor Connector B17	IERA WASH connector. camera wash mera air Terminal 1 2	her control unit Continuity Yes	t connector and pump connector.
S >> GO TO 4. >> Repair the harness of CHECK CONTINUITY REAR A Disconnect rear view camera Check for continuity between ar view camera washer control unit Connector Terminal 1 B16 2 Check for continuity between ar view camera washer control unit Connector Terminal 1 1	VIEW CAM a air pump o rear view o Rear view ca pump motor Connector B17	IERA WASH connector. camera wash mera air Terminal 1 2	her control unit Continuity Yes	t connector and pump connector.
>> Repair the harness of         CHECK CONTINUITY REAR         Disconnect rear view camera         Check for continuity between         ar view camera washer control unit         Connector         Terminal         1         2         Check for continuity between         ar view camera washer control unit         Connector         1         2         Check for continuity between         ar view camera washer control unit         Connector         Terminal         1         2	VIEW CAM a air pump o rear view o Rear view ca pump motor Connector B17	IERA WASH connector. camera wash mera air Terminal 1 2	her control unit Continuity Yes	t connector and pump connector.
CHECK CONTINUITY REAR Disconnect rear view camera Check for continuity between ar view camera washer control unit Connector Terminal B16 1 2 Check for continuity between ar view camera washer control unit Connector Terminal 1	VIEW CAM a air pump o rear view o Rear view ca pump motor Connector B17	IERA WASH connector. camera wash mera air Terminal 1 2	her control unit Continuity Yes	t connector and pump connector.
Disconnect rear view camera Check for continuity between r view camera washer control unit Connector Terminal B16 1 2 Check for continuity between r view camera washer control unit Connector Terminal 1	Rear view ca pump motor Connector B17	connector. camera wasł mera air Terminal 1 2	her control unit Continuity Yes	t connector and pump connector.
Check for continuity between         ar view camera washer control unit         Connector       Terminal         B16       1         2         Check for continuity between         ar view camera washer control unit         Connector         Terminal         1         2         Check for continuity between         ar view camera washer control unit         Connector         Terminal         1	Rear view ca pump motor Connector B17	camera wasł mera air Terminal 1 2	Continuity Yes	
r view camera washer control unit Connector Terminal B16 1 Check for continuity between r view camera washer control unit Connector Terminal 1	Rear view ca pump motor Connector B17	mera air Terminal 1 2	Continuity Yes	
Connector Terminal B16 1 Check for continuity between Terminal Check for continuity between Terminal Connector Terminal 1	pump motor Connector B17	Terminal 1 2	Yes	
Connector Terminal B16 Check for continuity between ar view camera washer control unit Connector Terminal 1	pump motor Connector B17	Terminal 1 2	Yes	
Connector     Terminal       B16     1       2     2       Check for continuity between       ar view camera washer control unit       Connector     Terminal       1     1	Connector B17	1 2	Yes	
B16 2 Check for continuity between ar view camera washer control unit Connector Terminal 1		2		
2       Check for continuity between       ar view camera washer control unit       Connector     Terminal       1				_
ar view camera washer control unit Connector Terminal	n rear view o	camera wasł		—
ar view camera washer control unit Connector Terminal			ner control uni	t connector and ground.
Connector Terminal				<b>J</b>
1				
		Continuit	y	
	Ground			
B16 2		No		
spection result normal?				
S >> GO TO 5.				
>> Repair the harness of	or connector	r.		
HECK REAR VIEW CAMER	A AIR PUM	IP MOTOR I	ITS CONTROL	UNIT SUPPLY CIRCUIT
				I 1 and from ground to terminal 2 of the
view camera air pump motor.				
s the pump operate?				
S >> GO TO 6.				
>> Replace the rear view				
HECK REAR VIEW CAMER	A AIR PUM	IP MOTOR I	ITS CONTROL	_
Reconnect the ITS control un				UNIT SUPPLY CIRCUIT

[MOD]

### **U1309 PUMP UNIT CURRENT**

#### < DTC/CIRCUIT DIAGNOSIS >

	Terminal				
(	+)		-	Voltage	
	Rear view camera washer control unit		Condition	(Approx.)	
Connector	Connector Terminals				
B16	7, 8	Ground	Activating pump	5 V	

Can voltage be measured on either terminal?

YES >> Replace rear view camera washer control unit.

NO >> Replace the ITS control unit. Refer to DAS-66, "Removal and Installation - ITS Control Unit".

#### U130B REAR CAMERA COMM ERROR

#### < DTC/CIRCUIT DIAGNOSIS >

### U130B REAR CAMERA COMM ERROR

### DTC Logic

[MOD]

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INFOID:000000008841980

DTC	Trouble diagnosis	s name	DTC dete	cting condition	Possible causes
U130B	REAR CAMERA ( ERROR	СОММ	ITS control unit receinication signal from r	ves the incorrect commu- ear view camera.	<ul><li>Rear view camera</li><li>Harness</li><li>ITS control unit</li></ul>
TC CONF	IRMATION PRO	CEDI	JRE		
.PERFOR	M DTC CONFIRM	NATIO	N PROCEDURE		
2. Perform 3. Check if <u>s "U130B" d</u> YES >> F	etected as the cu	etected urrent m	l as the current ma		gnostic Result" of "AVM".
Diagnosis	Procedure				INFOID:00000008841981
	/iring Diagram inf TOR CHECK	formatio	on, refer to <u>DAS-2</u>	2, "Wiring Diagram".	
CONNEC	TOR CHECK			2, "Wiring Diagram". ectors for the followin	g:
CONNEC Check the IT Proper con Damage	TOR CHECK S control unit and nection	d rear v			g:
1.CONNEC Check the IT Proper con Damage Disconnect	TOR CHECK	d rear v inals			g:
1.CONNEC Check the IT Proper con Damage Disconnect s the inspec YES >> 0	TOR CHECK S control unit and nection ted or loose termi tion result norma GO TO 2.	d rear v inals <u>I?</u>	iew camera conn		g:
1.CONNEC Check the IT Proper con Damage Disconnect Is the inspec YES >> 0 NO >> F	TOR CHECK S control unit and nection ted or loose termi tion result norma GO TO 2. Repair the termin	d rear v inals <u>I?</u> al and c	iew camera conn		g:
1.CONNEC Check the IT Proper con Damage Disconnect s the inspec YES >> 0 NO >> F 2.CHECK R	TOR CHECK S control unit and nection ted or loose termi tion result normal GO TO 2. Repair the termin REAR VIEW CAM ITS control unit a	d rear v inals I? al and IERA V and rea	riew camera conn connector. OLTAGE ir view camera ha		g:
1.CONNEC Check the IT Proper con Damage Disconnect s the inspec YES >> 0 NO >> F 2.CHECK R	TOR CHECK S control unit and nection ted or loose termi tion result normal GO TO 2. Repair the termin REAR VIEW CAM ITS control unit a	d rear v inals I? al and IERA V and rea	riew camera conn connector. OLTAGE ir view camera ha	ectors for the followin	g:
1.CONNEC Check the IT Proper con Damage Disconnect s the inspec YES >> 0 NO >> F 2.CHECK R 1. Connect 2. Check ve	TOR CHECK S control unit and nection ted or loose termine GO TO 2. Repair the termine REAR VIEW CAM ITS control unit a poltage between IT Terminal	d rear v inals l? lal and IERA V and rea TS cont	riew camera conn connector. OLTAGE ir view camera ha	ectors for the followin rness connectors. M59 and ground.	g:
1.CONNEC Check the IT Proper con Damage Disconnect s the inspec YES >> 0 NO >> F 2.CHECK R 1. Connect 2. Check vo	TOR CHECK S control unit and nection ted or loose termine GO TO 2. Repair the termine REAR VIEW CAM ITS control unit a oltage between IT Terminal	d rear v inals I? al and IERA V and rea	riew camera conn connector. OLTAGE Ir view camera ha trol unit connector	ectors for the followin rness connectors. M59 and ground.	g:
1.CONNEC Check the IT Proper con Damage Disconnect s the inspec YES >> 0 NO >> F 2.CHECK R 1. Connect 2. Check ve	TOR CHECK S control unit and nection ted or loose termine GO TO 2. Repair the termine REAR VIEW CAM ITS control unit a oltage between IT Terminal	d rear v inals l? lal and IERA V and rea TS cont	riew camera conn connector. OLTAGE Ir view camera ha trol unit connector	ectors for the followin rness connectors. M59 and ground.	g:

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### **U1310 PUMP UNIT CIRCUIT**

#### < DTC/CIRCUIT DIAGNOSIS >

### **U1310 PUMP UNIT CIRCUIT**

#### DTC Logic

INFOID:00000008841986

[MOD]

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U1310	PUMP UNIT CIRCUIT	ITS control unit detects the value of voltage from pump control unit is incorrect	<ul><li>Rear view camera washer control unit</li><li>Harness</li><li>ITS control unit</li></ul>

#### DTC CONFIRMATION PROCEDURE

### 1.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- 2. Perform "All DTC Reading" with CONSULT.
- 3. Check if the "U1310" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".

#### Is "U1310" detected as the current malfunction?

- YES >> Refer to DAS-266, "Diagnosis Procedure".
- NO >> Inspection End.

#### **Diagnosis** Procedure

INFOID:000000008841987

Regarding Wiring Diagram information, refer to DAS-22, "Wiring Diagram".

### 1. CHECK REAR VIEW CAMERA AIR PUMP MOTOR POWER SUPPLY CIRCUIT

1. Disconnect the rear view camera washer control unit connector.

- 2. Turn the ignition switch ON.
- 3. Check voltage between rear view camera washer control unit connector and ground.

	Terminal			
(	(+)			Voltage (Approx.)
	Rear view camera washer control unit		Condition	
Connector	Connector Terminal			
B16	12	Ground	Ignition ON	Battery voltage

Is inspection result normal?

YES >> GO TO 2.

NO >> Repair the harness or connector.

#### 2.CHECK REAR VIEW CAMERA AIR PUMP MOTOR GROUND CIRCUIT

- 1. Turn the ignition switch OFF.
- 2. Check for continuity between rear view camera washer control unit connector and ground.

Rear view camera	washer control unit		Continuity
Connector	Terminal	Ground	Continuity
B16	5		Yes

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the harness or connector.

3. CHECK CONTINUITY ITS CONTROL UNIT TO REAR VIEW CAMERA WASHER CONTROL UNIT

1. Disconnect the ITS control unit connector.

#### **DAS-266**

### **U1310 PUMP UNIT CIRCUIT**

#### < DTC/CIRCUIT DIAGNOSIS >

2. Check for continuity between ITS control unit harness connector and rear view camera washer control unit connector.

ITS con	trol unit	Rear view ca control unit	mera washer	Continuity	
Connector	Terminal	Connector	Terminal		
MEQ	2	<b>D16</b>	7	Vaa	
M58	3	B16	8	Yes	
Check for co	ontinuity betwee	en ITS contro	l unit harnes	ss connector and ground.	
ITS con	itrol unit	_	Continuit	v	
Connector	Terminal	Ground			
M58	2	_	No		
mee	3		110		
spection res	<u>ult normal?</u>				
S >> GO	-				
•	air the harness				
CHECK CON	TINUITY REAF	R VIEW CAM	ERA WASH	ER CONTROL UNIT TO PUMP	
Disconnect	rear view came	ra air pump o	connector.		
				her control unit connector and pump connector	•
ar view camera	washer control unit	Rear view ca	mera air		
		pump motor		Continuity	
Connector	Terminal	Connector	Terminal		
B16	1	B17	1	Yes	
	2		2		
Check for co	ontinuity betwee	en rear view o	camera was	her control unit connector and ground.	
ar view camera	washer control unit				
Connector	Terminal	_	Continuit	у	
	1	Ground			
B16	2	_	No		
spection res					
ES >> GO ) >> Rep	IO 5. air the harness	or connector	-		
•					
CHECK REA	R VIEW CAME		IP MOTOR	TS CONTROL UNIT SUPPLY CIRCUIT	
			battery posi	tive to terminal 1 and from ground to terminal 2	? of the
	a air pump moto	or.			
es the pump of					
S >> GO					
-	lace the rear vie				
CHECK REA	R VIEW CAME	RA AIR PUN	IP MOTOR	TS CONTROL UNIT SUPPLY CIRCUIT	
	he ITS control u		or.		

[MOD]

### **U1310 PUMP UNIT CIRCUIT**

#### < DTC/CIRCUIT DIAGNOSIS >

	Terminal			
(*	+)			Voltage
	Rear view camera washer control unit		Condition	(Approx.)
Connector	Connector Terminals			
B16	7, 8	Ground	Activating pump	5 V

Can voltage be measured on either terminal?

YES >> Replace rear view camera washer control unit.

NO >> Replace the ITS control unit. Refer to DAS-66, "Removal and Installation - ITS Control Unit".

		-	ER SUPPL	Y AND GR	OUND CIRC	UIT [MOD]
					-	
			GROUNL			
Diagnosis	Procedu	re				INFOID:00000008841991
Regarding V	Viring Diagra	am informa	ation, refer to	DAS-22, "Wirir	ng Diagram".	
<b>1.</b> CHECK I	TS CONTRO	OL UNIT F	POWER SUP	PLY CIRCUIT		
Check voltag	ge between	ITS contro	l unit harnes	s connector an	d ground.	
					_	
1	Terminal	()				
	+) htrol unit	()	1	Voltage (Approx.)		
Connector	Terminal	-	Ignition switch			
			OFF Battery voltage			
MEQ	20	Ground	ON	Battery voltag	Battery voltage	
M58	39		OFF	0 V		
	00		ON	Battery voltag	e	
NO >>	•		unit power s GROUND CIF			
1. Turn the	e ignition swi	tch OFF.				
	ect the ITS of or continuity			nit harness con	nector and groui	nd
. Oneek k	or continuity	between				na.
ITS	S control unit			Continuity		
Connector		ninal	Ground	Continuity		
M58		0		Yes		
•	tion result n					
	Inspection E Repair the I		unit ground o	circuit.		

#### WARNING SYSTEMS SWITCH CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

### WARNING SYSTEMS SWITCH CIRCUIT

#### **Component Function Check**

1. CHECK WARNING SYSTEMS SWITCH INPUT SIGNAL

#### 1. Turn the ignition switch ON.

2. Select the DATA MONITOR item "ITS SW 1" of "AVM" with CONSULT.

3. With operating the warning systems switch, check the monitor status.

Monitor item	Condition	Monitor status
ITS SW 1	Warning systems switch is pressed	On
113 500 1	Warning systems switch is not pressed	OFF

#### Is the inspection result normal?

YES >> Warning systems switch circuit is normal.

NO >> Refer to DAS-270. "Diagnosis Procedure".

#### **Diagnosis** Procedure

INFOID:000000008932662

Regarding Wiring Diagram information, refer to DAS-22, "Wiring Diagram".

### 1. CHECK WARNING SYSTEMS SWITCH SIGNAL INPUT

- 1. Turn the ignition switch ON.
- 2. Check voltage between ITS control unit harness connector and ground.

	Terminals	Oanditian		
(	(+)		Condition	Voltage
ITS cor	ntrol unit		Warning	(Approx.)
Connector	Terminal	Ground	systems switch	
M58	32		Pressed	0 V
IVIJO	52		Released	12 V

Is the inspection result normal?

YES	>> Replace the ITS control unit. Refer to DAS-66, "Removal and Installation - ITS Control Unit".
NO	>> GO TO 2.

### 2. CHECK WARNING SYSTEMS SWITCH

1. Turn ignition switch OFF.

- 2. Remove warning systems switch.
- 3. Check warning systems switch. Refer to <u>DAS-271, "Component Inspection"</u>.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace the warning systems switch. Refer to <u>DAS-138</u>, "Removal and Installation".

3.CHECK WARNING SYSTEMS SWITCH GROUND CIRCUIT

Check continuity between warning system switch harness connector terminal and ground.

	Warning sy	stem switch		Continuity	
_	Connector	Terminal	Ground	Continuity	
	M62	8	Ť	Yes	
			-		

Is the inspection result normal?

INFOID:00000008932661

### WARNING SYSTEMS SWITCH CIRCUIT

< DTC/CIR					[MOD]
		ess or conne	ctor.		<u>·</u>
4.CHECK	WARNING S	YSTEMS SV	VITCH SIGI	NAL INPUT	CIRCUIT FOR OPEN
		control unit c ween the ITS		it harness co	nnector and warning system switch harness con-
ITS co	ntrol unit	Warning sy	stem switch		•
Connector	Terminal	Connector	Terminal	Continuity	
M58	32	M62	6	Yes	
s the inspec	ction result n	ormal?			
	GO TO 5.				
		arnesses or			CIRCUIT FOR SHORT
	nuity betwee	in the ITS co	ntroi unit na	rness conne	ctor and ground.
ITS	control unit				
Connector	1	nal G	round	Continuity	
M58	32			No	-
s the inspec	ction result n	ormal?			
YES >>	Replace the	ITS control u			Removal and Installation - ITS Control Unit".
NO >>	Repair the h	arnesses or	connectors.		
Compone	ent Inspect	tion			INFOID:00000008932663
	WARNING S	YSTEMS SV	VITCH		
		ing systems			
	nulty of warn	ing systems	Switch.		
Terminal		Condition		Continuity	
0 0	When warning	g systems switc	h is pressed	Yes	-
6 8	When warning systems switch is released		No		
s the inspec	ction result n	ormal?		<u> </u>	
	Inspection E				
NO >>	Replace the	warning sys	tems switch	. Refer to <u>D/</u>	AS-138, "Removal and Installation".

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### WARNING SYSTEMS ON INDICATOR CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

### WARNING SYSTEMS ON INDICATOR CIRCUIT

#### **Component Function Check**

**1.**CHECK WARNING SYSTEMS ON INDICATOR

- 1. Turn the ignition switch ON.
- 2. Select the active test item "BSW ON INDICATOR" of "AVM" with CONSULT.
- 3. With operating the test item, check the operation.

On : Warning systems ON indicator illuminates

Off : Warning systems ON indicator is turned OFF

#### Is the inspection result normal?

- YES >> Inspection End.
- NO >> Refer to <u>DAS-272</u>, "Diagnosis Procedure".

#### **Diagnosis** Procedure

INFOID:00000008932665

[MOD]

INFOID:00000008932664

Regarding Wiring Diagram information, refer to DAS-22, "Wiring Diagram".

### 1. CHECK WARNING ON INDICATOR POWER SUPPLY CIRCUIT

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

(	+)	(-)	Voltage
Warning sy	stem switch		(Approx.)
Connector	Terminal	Ground	
M62	5		Battery voltage

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the warning systems ON indicator power supply circuit.

2. CHECK WARNING SYSTEMS ON INDICATOR SIGNAL FOR OPEN

- 1. Turn ignition switch OFF.
- 2. Disconnect the ITS control unit harness connector.
- Check continuity between the ITS control unit harness connector and warning system switch harness connector.

ITS control unit		Warning sy	Continuity		
Connector	Terminal	Connector Terminal		Continuity	
M58	33	M62	3	Yes	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the harnesses or connectors.

 ${f 3.}$ CHECK WARNING SYSTEMS ON INDICATOR SIGNAL CIRCUIT FOR SHORT

Check continuity between the ITS control unit harness connector and ground.

### WARNING SYSTEMS ON INDICATOR CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

[MOD]

<u> </u>	ITS	control unit		Continuity	
Cor	nnector	Terminal	Ground	Continuity	
	58	33		No	
'ES IO	>> >>	<u>ition result normal</u> GO TO 4. Repair the harnes: VARNING SYSTE	ses or connecto		
		ation result normal		er to <u>DAS-273,</u>	Component Inspection".
YES	•		-	er to DAS-66. "F	emoval and Installation - ITS Control Unit".
10	>>	Replace warning s	systems switch.	DAS-138, "Rer	noval and Installation".
omp	oone	nt Inspection			INFOID:000000089326
-					
.CH	ECK V	VARNING SYSTE	MS ON INDICA	TOR	
			ng systems swite	ch terminals 3 a	nd 5, and then check if the warning systems Of
dicat	or illui	minates.			
<b>T</b>	· ! .				
Term		Condi	tion	Warning sys- tems ON indica-	
(+)	(-)	Condition		tor	
5	3	When the battery vol	tage is applied	On	
5	3	When the battery vol When the battery vol			
	-		tage is not applied	On	
the i YES	inspec	When the battery volution result normal	tage is not applied	On Off	
the i	inspec	When the battery volution result normal	tage is not applied	On Off	S-138. "Removal and Installation".
the i YES	inspec	When the battery volution result normal	tage is not applied	On Off	S-138. "Removal and Installation".
the i YES	inspec	When the battery volution result normal	tage is not applied	On Off	S-138. "Removal and Installation".
the i YES	inspec	When the battery volution result normal	tage is not applied	On Off	<u>S-138. "Removal and Installation"</u> .
the i YES	inspec	When the battery volution result normal	tage is not applied	On Off	S-138. "Removal and Installation".
the i YES	inspec	When the battery volution result normal	tage is not applied	On Off	<u>S-138. "Removal and Installation"</u> .
the i YES	inspec	When the battery volution result normal	tage is not applied	On Off	S-138. "Removal and Installation".
the i YES	inspec	When the battery volution result normal	tage is not applied	On Off	<u>S-138. "Removal and Installation"</u> .
the i YES	inspec	When the battery volution result normal	tage is not applied	On Off	S-138. "Removal and Installation".
the i YES	inspec	When the battery volution result normal	tage is not applied	On Off	<u>S-138. "Removal and Installation"</u> .
the i YES	inspec	When the battery volution result normal	tage is not applied	On Off	S-138. "Removal and Installation".
the i YES	inspec	When the battery volution result normal	tage is not applied	On Off	S-138. "Removal and Installation".
the i YES	inspec	When the battery volution result normal	tage is not applied	On Off	S-138. "Removal and Installation".
the i YES	inspec	When the battery volution result normal	tage is not applied	On Off	S-138. "Removal and Installation".
the i YES	inspec	When the battery volution result normal	tage is not applied	On Off	S-138. "Removal and Installation".

### WARNING BUZZER CIRCUIT

### **Component Function Check**

#### **1.**CHECK WARNING BUZZER

- 1. Turn the ignition switch ON.
- 2. Select the active test item "BUZZER" of "BCM" with CONSULT.
- 3. With operating the test item, check the operation.

On : Warning buzzer is activated.

Off : Warning buzzer is not activated.

#### Is the inspection result normal?

- YES >> Inspection End.
- NO >> Refer to <u>DAS-274</u>, "Diagnosis Procedure".

#### **Diagnosis** Procedure

INFOID:00000008932668

### 1.CHECK WARNING BUZZER OPERATION

While activating the buzzer with CONSULT, listen for the buzzer sound.

Does warning buzzer sound?

- YES >> Replace the ITS control unit. Refer to DAS-66, "Removal and Installation ITS Control Unit".
- NO >> Replace the combination meter (buzzer).

INFOID:000000008932667

## SYMPTOM DIAGNOSIS MOD SYSTEM SYMPTOMS

#### Symptom Table

#### **CAUTION:**

Perform the self-diagnosis with CONSULT before the symptom diagnosis. Perform the trouble diagnosis if any DTC is detected. NOTE:

#### Refer to the following the operation condition of the Moving Object Detection system.

• Moving Object Detection system: DAS-219, "System Description".

Sympt	om	Possible cause	Inspection item/Reference page	
Indicator/warning lamps do not il- luminate when ignition switch OFF $\Rightarrow$ ON.	<ul> <li>All of indicator/warning lamps do not illuminate;</li> <li>Moving Object Detection warning lamp</li> <li>Moving Object Detection ON indicator</li> <li>Warning systems ON indi- cator</li> </ul>	<ul> <li>Power supply and ground circuit of ITS control unit</li> <li>ITS control unit</li> <li>Combination meter</li> </ul>	Power supply and ground circuit of ITS control unit. Refer to <u>DAS-</u> <u>60, "Diagnosis Procedure"</u>	
	Buzzer is not sounding	Buzzer (combination meter)	Refer to DAS-65, "Component Function Check"	(

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#### < SYMPTOM DIAGNOSIS >

### MOD SYSTEM DOES NOT ACTIVATE

#### Description

The switch does not turn ON

 When the Moving Object Detection system setting is ON, the Moving Object Detection ON indicator does not illuminate even if the warning system switch is depressed.

The switch does not turn OFF

• The Moving Object Detection ON indicator does not turn off even if the warning system switch is pressed when the Moving Object Detection ON indicator illuminates.

#### Diagnosis Procedure

INFOID:000000008660304

### 1. CHECK MOVING OBJECT DETECTION SYSTEM SETTING

1. Start the engine.

- 2. After starting the engine wait for 5 seconds or more.
- 3. Check that Moving Object Detection system setting on the navigation screen is ON.

Is Moving Object Detection system setting ON?

YES >> GO TO 2.

NO >> Enable the Moving Object Detection system setting.

2.MOD SWITCH INSPECTION

- 1. Start the engine.
- 2. Check that "mod SW" operates normally in "DATA MONITOR" of "AVM" with CONSULT.

Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 5.

### $\mathbf{3}$ . CHECK MOVING OBJECT DETECTION ON INDICATOR CIRCUIT

#### 1. Start the engine.

- 2. Select the active test item "MOD ON IND" of "AVM" with CONSULT.
- 3. Check if the Moving Object Detection ON indicator illuminates when the test item is operated.

Is the inspection result normal?

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

**4.**PERFORM THE SELF-DIAGNOSIS OF COMBINATION METER

1. Perform "All DTC Reading" with CONSULT.

 Check if the DTC is detected in self-diagnosis results of "METER/M&A". Refer to <u>MWI-27, "DTC Index"</u>. Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 6.

**5.**PERFORM THE SELF-DIAGNOSIS

- 1. Perform "All DTC Reading" with CONSULT.
- 2. Check if the DTC is detected in self-diagnosis results of "AVM". Refer to DAS-20, "DTC Index".

Is any DTC detected?

YES >> GO TO 6.

NO >> GO TO 7.

**6.**REPAIR OR REPLACE MALFUNCTIONING PARTS.

Repair or replace malfunctioning parts.

>> GO TO 7.

7. CHECK MOVING OBJECT DETECTION SYSTEM

INFOID:00000008660303

MOD SYSTEM DOES NOT ACTIVATE	
< SYMPTOM DIAGNOSIS >	[MOD]
<ol> <li>Erase "self-diagnosis result", and then perform "All DTC Reading" again after perform (Refer to <u>DAS-243, "Description"</u> for action test.)</li> <li>Check that the Moving Object Detection system is normal.</li> </ol>	ning the action test.
>> Inspection End.	I
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#### MOD SYSTEM SETTINGS CANNOT BE TURNED ON/OFF IN VEHICLE INFOR-MATION DISPLAY

< SYMPTOM DIAGNOSIS >

[MOD]

### MOD SYSTEM SETTINGS CANNOT BE TURNED ON/OFF IN VEHICLE IN-FORMATION DISPLAY

#### Description

INFOID:000000008660305

• Moving Object Detection system setting is not selectable on the vehicle information display screen. **NOTE:** 

When the ignition switch is in ACC position, Moving Object Detection system settings cannot be changed.

- "Moving Object Detection" is not indicated on the vehicle information display screen.
- The switching between ON and OFF cannot be performed by operating the vehicle information display setting system selection.
- The item "Moving Object Detection" on the vehicle information display screen is not active.
- The Moving Object Detection system setting differs from the one set at the previous driving. **NOTE:**

Turn OFF the ignition switch and wait for 5 seconds or more.

#### **Diagnosis** Procedure

INFOID:000000008660306

#### 1. CHECK MOVING OBJECT DETECTION SYSTEM SETTING

- 1. Start the engine.
- 2. Check that the Moving Object Detection system settings is selectable on the vehicle information display screen.

Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

2.PERFORM THE SELF-DIAGNOSIS

- 1. Perform self-diagnosis with CONSULT.
- Check if the DTC is detected in self-diagnosis results of "AVM", "MULTI AV" and "METER/M&A". Refer to the following.
- AVM: <u>DAS-20</u>, "DTC Index"
- MULTI AV (with BOSE): AV-309, "DTC Index"
- MULTI AV (without BOSE): AV-216, "DTC Index"
- METER/M&A: <u>MWI-27, "DTC Index"</u>

Is any DTC detected?

- YES >> Repair or replace malfunctioning parts.
- NO >> Inspection End.

3.CHECK DATA MONITOR OF ITS CONTROL UNIT

Check that "MOD SELECT" operates normally in "DATA MONITOR" of "AVM" with CONSULT.

Is the inspection result normal?

YES >> Refer to DAS-14, "CONSULT Function (AVM)".

NO >> GO TO 4.

**4**.CHECK MULTIFUNCTION SWITCH

Operate the multifunction switch to check that the audio, navigation system, and air conditioner operate properly.

Is the inspection result normal?

- YES >> Replace the ITS control unit. Refer to DAS-66, "Removal and Installation ITS Control Unit".
- NO >> Repair or replace malfunctioning parts.

#### NORMAL OPERATING CONDITION

### NORMAL OPERATING CONDITION

### Description

MOVING OBJECT DETECTION <ul> <li>The Moving Object Detection system is not a replacement for proper driving procedure and is not designed</li> </ul>	В
<ul> <li>to prevent contact with vehicles or objects. When backing up. always look in the direction driver will move to ensure it is safe to proceed. Never rely solely on the Moving Object Detection system.</li> <li>Using the Moving Object Detection system under some road or weather condition could lead to improper system operation. Always rely on driver's own steering and braking operation to avoid accidents.</li> </ul>	С
<ul> <li>The Moving Object Detection system may not provide a warning for vehicles that pass through the detection zone quickly.</li> </ul>	D
<ul> <li>Do not use the Moving Object Detection system when towing a trailer.</li> <li>Excessive noise (e.g., audio system volume, open vehicle window) will interfere with the chime sound, and it moves the based</li> </ul>	
may not be heard Pedestrians, bicycles, animals A vehicle passing at a speed greater than approximately 24km/h (15 MPH ).	E
<ul> <li>A rear view camera may not detect approaching vehicles in certain situations:</li> <li>When the vehicle parked aside obstruct the beam of the rear view camera.</li> <li>When the vehicle is parked in an angled parking space.</li> </ul>	F
<ul> <li>When the vehicle is parked on an inclined ground.</li> <li>When the vehicle turns around into your vehicle's aisle.</li> <li>When the angle formed by your vehicle and approaching vehicle is small.</li> </ul>	G
<ul> <li>Severe weather or road spray conditions may reduce the ability of the radar to detect other vehicles.</li> <li>The rear view camera system may not detect:</li> <li>Small or moving object.</li> <li>Wedge-shaped objects.</li> </ul>	Н
<ul> <li>Object closer to the bumper than 30 cm (10 inch).</li> <li>Thin objects such as rope, wire, chain, etc.</li> <li>Do not use the MOD system under the following conditions because the system may not function properly:</li> </ul>	I
<ul> <li>When driving with a tire that is not the within normal tire condition (example: tire wear, low pressure, spare tire, chain, non-standard wheels).</li> <li>When the vehicle is equipped with non-original brake parts or suspension parts.</li> </ul>	J
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[MOD]

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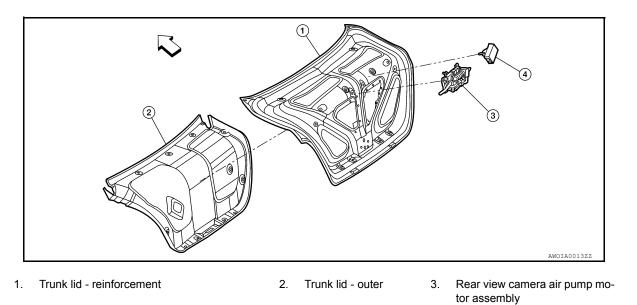
### < REMOVAL AND INSTALLATION >

REMOVAL AND INSTALLATION CONTROL UNIT

#### Exploded View

INFOID:000000008942918

[MOD]



4. Rear view camera washer control unit

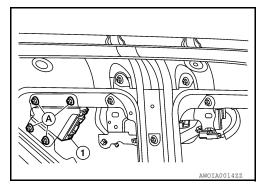
#### Removal and Installation - Rear View Camera Washer Control Unit

INFOID:000000008942920

#### REMOVAL AND INSTALLATION

Removal

- 1. Remove the trunk lid finisher. Refer to INT-33, "TRUNK LID FINISHER : Removal and Installation".
- 2. Disconnect the harness connector from the rear view camera washer control unit.
- 3. Remove the rear view camera washer control unit nuts (A).
- 4. Remove the rear view camera washer control unit (1).



Installation Installation is in the reverse order of removal.

#### **AIR PUMP**

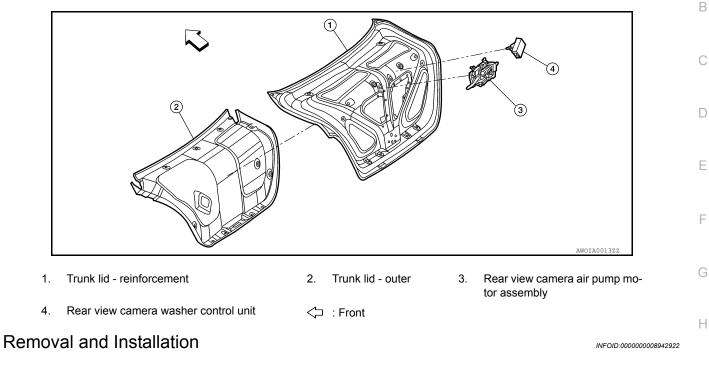
#### < REMOVAL AND INSTALLATION > AIR PUMP

# Exploded View

INFOID:000000008942921

[MOD]

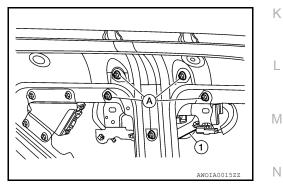
А



#### REMOVAL AND INSTALLATION

Removal

- 1. Remove the trunk lid finisher. Refer to INT-33, "TRUNK LID FINISHER : Removal and Installation".
- 2. Disconnect the air tube from the rear view camera air pump motor.
- 3. Disconnect the harness connector from the rear view camera air pump motor.
- 4. Remove the rear view camera air pump motor bracket nuts (A).
- 5. Remove the rear view camera air pump motor assembly (1).



Installation Installation is in the reverse order of removal.

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