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Н

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K

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# **CONTENTS**

ITS CONTROL UNIT	Inspection Procedure	34
PRECAUTION8	ACTION TEST	
	Description	
PRECAUTIONS8	Inspection Procedure	35
Precaution for Supplemental Restraint System	ADDITIONAL SERVICE WHEN REPLACIN	IC
(SRS) "AIR BAG" and "SEAT BELT PRE-TEN-	REAR VIEW CAMERA	
SIONER"8		
Precautions For Harness Repair8	Description	
SYSTEM DESCRIPTION9	Work Procedure	37
STOTEWIDESCRIPTION9	REAR VIEW CAMERA CALIBRATION	38
COMPONENT PARTS9	Description	
Component Parts Location9	Work Procedure (Preparation)	
Component Description10	Work Procedure (Target Setting)	
·	Work Procedure (Rear View Camera Calibrati	
SYSTEM11		
System Description11	DTC/CIRCUIT DIAGNOSIS	42
Fail-safe (ITS Control Unit)13	04400 VELIIOLE ODEED OENOOD	
DIA CNOCIC EVETEM (ITC CONTROL LINIT)	C1A03 VEHICLE SPEED SENSOR	
DIAGNOSIS SYSTEM (ITS CONTROL UNIT)14	DTC Logic	
CONSULT Function (AVM)14	Diagnosis Procedure	42
ECU DIAGNOSIS INFORMATION17	C1A04 ABS/TCS/VDC SYSTEM	43
	DTC Logic	
ITS CONTROL UNIT17	Diagnosis Procedure	
Reference Value17		
Fail-safe19	C1A39 STEERING ANGLE SENSOR	
DTC Inspection Priority Chart19	DTC Logic	
DTC Index20	Diagnosis Procedure	44
WIRING DIAGRAM22	U0122 VDC P-RUN DIAG	45
WIRING DIAGRAW22	DTC Logic	
DRIVER ASSISTANCE SYSTEMS22	Diagnosis Procedure	
Wiring Diagram22	Diagnosis Procedure	45
viinig Diagram22	U0416 VDC CHECKSUM DIAG	46
BASIC INSPECTION31	DTC Logic	
	Diagnosis Procedure	
DIAGNOSIS AND REPAIR WORK FLOW31	•	
Work Flow31	U0428 STEERING ANGLE SENSOR	
Diagnostic Work Sheet32	DTC Logic	
	Diagnosia Procedura	17

PRE-INSPECTION FOR DIAGNOSIS ......34

U1000 CAN COMM CIRCUIT	48	REAR VIEW CAMERA	. 69
Description	48	Exploded View	69
DTC Logic	48	Removal and Installation	69
Diagnosis Procedure	48	REAR VIEW CAMERA WASHER CONTROL	
U1010 CONTROL UNIT (CAN)	49	UNIT	70
Description		Exploded View	
DTC Logic		Removal and Installation	
Diagnosis Procedure	49		
U111A REAR CAMERA IMAGE SIGNAL CIR-		REAR VIEW CAMERA AIR PUMP MOTOR	
CUITCUIT		Exploded ViewRemoval and Installation	
DTC Logic		LDW	/ 1
Diagnosis Procedure		LDVV	
-		PRECAUTION	. 72
U1232 STEERING ANGLE SENSOR	52		
DTC Logic		PRECAUTIONS	. 72
Diagnosis Procedure	52	Precaution for Supplemental Restraint System	
U1305 CAMERA IMAGE CALIB	<b>E</b> 2	(SRS) "AIR BAG" and "SEAT BELT PRE-TEN-	
		SIONER"	
DTC Logic		Precaution for Work	
Diagnosis Procedure	၁১	Precautions For Harness Repair	
U1308 CAMERA CONFIG	54	Precaution for LDW System Service	73
DTC Logic	54	PREPARATION	71
Diagnosis Procedure			. / 4
		PREPARATION	. 74
U1309 PUMP UNIT CURRENT		Special Service Tool	74
DTC Logic			
Diagnosis Procedure	55	SYSTEM DESCRIPTION	. 75
U130B REAR CAMERA COMM ERROR	58	COMPONENT PARTS	. 75
DTC Logic	58	Component Parts Location	
Diagnosis Procedure	58	Component Description	
HASAS BUMB UNIT CIDCUIT			
U1310 PUMP UNIT CIRCUIT		SYSTEM	
DTC Logic  Diagnosis Procedure		System Description	
		Fail-safe (ITS Control Unit)	
POWER SUPPLY AND GROUND CIRCUIT	62	Fail-safe (Rear View Camera)	79
Diagnosis Procedure		OPERATION	. 80
		Switch Name and Function	
WARNING SYSTEMS SWITCH CIRCUIT		Menu Displayed by Pressing Each Switch	
Component Function Check			
Diagnosis Procedure		HANDLING PRECAUTION	
Component Inspection	64	Precautions for Lane Departure Warning	82
WARNING SYSTEMS ON INDICATOR CIR-		DIAGNOSIS SYSTEM (ITS CONTROL UNIT).	83
CUIT	65	CONSULT Function (AVM)	
Component Function Check		,	
Diagnosis Procedure		ECU DIAGNOSIS INFORMATION	. 86
Component Inspection		ITO CONTROL INIT	
		ITS CONTROL UNIT	
WARNING BUZZER CIRCUIT		Reference Value	
Component Function Check		Fail-safe	
Diagnosis Procedure	67	DTC Index	88
REMOVAL AND INSTALLATION	68	DTC Index	89
NEW VALARD INCIALLATION	00	WIRING DIAGRAM	. 91
ITS CONTROL UNIT	68		
Removal and Installation	68	DRIVER ASSISTANCE SYSTEMS	
		Wiring Diagram	01

٠	٨	
1	Δ	-
2	-	_

Α

В

 $\mathsf{D}$ 

Е

F

Н

Κ

BASIC INSPECTION100	U111A REAR CAMERA IMAGE SIGNAL CIR-
DIAGNOSIS AND REPAIR WORK FLOW 100	CUIT119
Work Flow 100	DTC Logic119
Diagnostic Work Sheet101	Diagnosis Procedure119
Diagnostic Work Sheet101	U1232 STEERING ANGLE SENSOR121
PRE-INSPECTION FOR DIAGNOSIS103	DTC Logic121
Inspection Procedure103	Diagnosis Procedure121
	Diagnosis i roccaire121
ACTION TEST104	U1305 CAMERA IMAGE CALIB 122
Description104	DTC Logic122
Inspection Procedure104	Diagnosis Procedure122
ADDITIONAL SERVICE WHEN REPLACING	HAZOO CAMEDA CONEIC
REAR VIEW CAMERA106	U1308 CAMERA CONFIG123
Description	DTC Logic123 Diagnosis Procedure123
Work Procedure	Diagnosis Flocedule123
	U1309 PUMP UNIT CURRENT124
REAR VIEW CAMERA CALIBRATION 107	DTC Logic124
Description107	Diagnosis Procedure124
Work Procedure (Preparation)107	
Work Procedure (Target Setting)108	U130B REAR CAMERA COMM ERROR 127
Work Procedure (Rear View Camera Calibration). 109	DTC Logic127
DTC/CIRCUIT DIAGNOSIS111	Diagnosis Procedure127
DIC/CIRCUIT DIAGNOSIS111	U1310 PUMP UNIT CIRCUIT128
C1A03 VEHICLE SPEED SENSOR111	DTC Logic
DTC Logic111	Diagnosis Procedure
Diagnosis Procedure111	_
	POWER SUPPLY AND GROUND CIRCUIT 131
C1A04 ABS/TCS/VDC SYSTEM112	Diagnosis Procedure131
DTC Logic112	WARNING SYSTEMS SWITCH CIRCUIT 132
Diagnosis Procedure112	
C1A39 STEERING ANGLE SENSOR113	Component Function Check
DTC Logic113	Diagnosis Procedure
Diagnosis Procedure113	Component inspection133
Diagnosis i rocedure113	WARNING SYSTEMS ON INDICATOR CIR-
U0122 VDC P-RUN DIAG114	CUIT134
DTC Logic114	Component Function Check134
Diagnosis Procedure114	Diagnosis Procedure134
HOAAC VIDO OHEOKOHIM DIA O	Component Inspection135
U0416 VDC CHECKSUM DIAG115	WARNING BUILTED AIDAUIT
DTC Logic	WARNING BUZZER CIRCUIT136
Diagnosis Procedure115	Component Function Check
U0428 STEERING ANGLE SENSOR116	Diagnosis Procedure136
DTC Logic116	SYMPTOM DIAGNOSIS137
Diagnosis Procedure116	
	LDW SYSTEM SYMPTOMS137
U1000 CAN COMM CIRCUIT117	Symptom Table137
Description117	LANE DEDARTURE WARNING LAMB BOEG
DTC Logic117	LANE DEPARTURE WARNING LAMP DOES
Diagnosis Procedure117	NOT TURN ON
U1010 CONTROL UNIT (CAN)118	Description
Description	Diagnosis Procedure138
DTC Logic118	THE SYSTEM OPERATES EVEN WHEN US-
Diagnosis Procedure	ING TURN SIGNAL139
	Description
	Diagnosis Procedure
	2.agii00i0 i 1000aai0109

LDW SYSTEM SETTINGS CANNOT BE TURNED ON/OFF IN VEHICLE INFORMA-		ECU DIAGNOSIS INFORMATION	161
TION DISPLAY	140	ITS CONTROL UNIT	161
Description		Reference Value	161
Diagnosis Procedure		Fail-safe	163
•		DTC Inspection Priority Chart	
NORMAL OPERATING CONDITION		DTC Index	164
Description	141	WIRING DIAGRAM	166
REMOVAL AND INSTALLATION	142		
		DRIVER ASSISTANCE SYSTEMS	
WARNING SYSTEMS SWITCH		Wiring Diagram	166
Removal and Installation	142	BASIC INSPECTION	175
REAR VIEW CAMERA	143		
Exploded View	143	DIAGNOSIS AND REPAIR WORK FLOW	
Removal and Installation		Work Flow	
REAR VIEW CAMERA WASHER CONTROI		Diagnostic Work Sheet	176
UNIT		PRE-INSPECTION FOR DIAGNOSIS	178
Exploded View		Inspection Procedure	
Removal and Installation		A OTION TEST	
		ACTION TEST	
REAR VIEW CAMERA AIR PUMP MOTOR		DescriptionInspection Procedure	
Exploded View		inspection Procedure	179
Removal and Installation	145	ADDITIONAL SERVICE WHEN REPLACING	;
BSW		REAR VIEW CAMERA	181
PRECAUTION	146	Description	
		Work Procedure	181
PRECAUTIONS Precaution for Supplemental Restraint System	146	REAR VIEW CAMERA CALIBRATION	
(SRS) "AIR BAG" and "SEAT BELT PRE-TEN-		Description	
SIONER"	146	Work Procedure (Preparation)	
Precaution for Work	146	Work Procedure (Target Setting) Work Procedure (Rear View Camera Calibration	
Precautions For Harness Repair		Work Flocedule (Real View Camera Calibration	). 10 <del>4</del>
Precaution for BSW System Service	147	DTC/CIRCUIT DIAGNOSIS	186
PREPARATION	148	C1A03 VEHICLE SPEED SENSOR	186
		DTC Logic	
PREPARATION		Diagnosis Procedure	
Special Service Tool	148	· ·	
SYSTEM DESCRIPTION	149	C1A04 ABS/TCS/VDC SYSTEM	
		DTC Logic  Diagnosis Procedure	
COMPONENT PARTS		Diagnosis Procedure	101
Component Parts Location		C1A39 STEERING ANGLE SENSOR	188
Component Description	150	DTC Logic	
SYSTEM	152	Diagnosis Procedure	188
System Description	152	U0122 VDC P-RUN DIAG	189
Fail-safe (ITS Control Unit)	154	DTC Logic	
OPERATION	155	Diagnosis Procedure	
Switch Name and Function			
System Display and Warning		U0416 VDC CHECKSUM DIAG	
		DTC Logic	
HANDLING PRECAUTION		Diagnosis Procedure	190
Precautions for Blind Spot Warning	157	U0428 STEERING ANGLE SENSOR	191
DIAGNOSIS SYSTEM (ITS CONTROL UNIT	), 158	DTC Logic	
CONSULT Function (AVM)		Diagnosis Procedure	191

)	Δ	v	3

В

 $\mathsf{D}$ 

Е

F

Н

K

DTC Logic		Description	213
Diagnosis Procedure	192	Diagnosis Procedure	213
U1010 CONTROL UNIT (CAN)	400	DOW OVETEM CETTINGS CANNOT DE	
· · · · · · · · · · · · · · · · · · ·		BSW SYSTEM SETTINGS CANNOT BE	
Description		TURNED ON/OFF IN VEHICLE INFORMA-	
DTC Logic Diagnosis Procedure	103	TION DISPLAY	
Diagnosis Frocedure	193	Description	
<b>U111A REAR CAMERA IMAGE SIGNAL</b>	CIR-	Diagnosis Procedure	215
CUIT	194	NORMAL OPERATING CONDITION	216
DTC Logic	194	Description	
Diagnosis Procedure		·	
LIAGO OTEEDING ANGLE GENOOD		REMOVAL AND INSTALLATION	217
U1232 STEERING ANGLE SENSOR		WARNING OVETENC CWITCH	
DTC Logic		WARNING SYSTEMS SWITCH	
Diagnosis Procedure	196	Removal and Installation	217
U1305 CAMERA IMAGE CALIB	197	BSW INDICATOR	218
DTC Logic		Exploded View	
Diagnosis Procedure		Removal and Installation	
-			
U1308 CAMERA CONFIG	198	REAR VIEW CAMERA	219
DTC Logic		Exploded View	
Diagnosis Procedure	198	Removal and Installation	219
U1309 PUMP UNIT CURRENT	400	REAR VIEW CAMERA WASHER CONTROL	
DTC Logic Diagnosis Procedure		UNIT	
Diagnosis Frocedure	199	Exploded ViewRemoval and Installation	
<b>U130B REAR CAMERA COMM ERROR</b>	202	Removal and installation	220
DTC Logic	202	REAR VIEW CAMERA AIR PUMP MOTOR.	221
Diagnosis Procedure	202	Exploded View	221
		Removal and Installation	
U1310 PUMP UNIT CIRCUIT		MOD	
DTC Logic			
Diagnosis Procedure	203	PRECAUTION	222
POWER SUPPLY AND GROUND CIRCU	JIT 206	PRECAUTIONS	000
Diagnosis Procedure			222
		Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TEN-	
WARNING SYSTEMS SWITCH CIRCUIT		SIONER"	222
Component Function Check		Precaution for Work	
Diagnosis Procedure		Precautions For Harness Repair	
Component Inspection	208	r recautions r or riamess repair	222
WARNING SYSTEMS ON INDICATOR C	·ID_	PREPARATION	224
CUIT			
Component Function Check		PREPARATION	
Diagnosis Procedure		Special Service Tool	224
Component Inspection		SYSTEM DESCRIPTION	225
·		OTOTEM DESCRIPTION	225
WARNING BUZZER CIRCUIT	211	COMPONENT PARTS	225
Component Function Check	211	Component Parts Location	
Diagnosis Procedure	211	Component Description	
CVMDTOM DIA CNOCIO		·	
SYMPTOM DIAGNOSIS	212	SYSTEM	
BSW SYSTEM SYMPTOMS	212	System Description	228
Symptom Table		OPERATION	231
C,p.c	4 1 4	System Display and Warning	
		e,e.e	0

**SWITCH DOES NOT TURN ON / SWITCH** 

DOES NOT TURN OFF ......213

U1000 CAN COMM CIRCUIT ......192

Revision: November 2013 DAS-5 2014 Altima NAM

HANDLING PRECAUTION	232	DTC Logic	264
Precautions for Moving Objects Detection		Diagnosis Procedure	
DIAGNOSIS SYSTEM (ITS CONTROL UNI	IT). 233	U0428 STEERING ANGLE SENSOR	265
CONSULT Function (AVM)	233	DTC Logic	
ECU DIAGNOSIS INFORMATION	226	Diagnosis Procedure	265
LOO DIAGNOSIO INI ORNIATION	230	U1000 CAN COMM CIRCUIT	266
ITS CONTROL UNIT	236	Description	
Reference Value	236	DTC Logic	
Fail-safe		Diagnosis Procedure	
DTC Inspection Priority Chart			
DTC Index	239	U1010 CONTROL UNIT (CAN)	
WIDING DIAGRAM	044	Description	
WIRING DIAGRAM	241	DTC Logic	
DRIVER ASSISTANCE SYSTEMS	241	Diagnosis Procedure	267
Wiring Diagram		U111A REAR CAMERA IMAGE SIGNAL CII	R-
		CUIT	
BASIC INSPECTION	250	DTC Logic	
DIA ONOGIO AND DEDAID WORK ELOW		Diagnosis Procedure	
DIAGNOSIS AND REPAIR WORK FLOW			
Work Flow		U1232 STEERING ANGLE SENSOR	
Diagnostic Work Sheet	251	DTC Logic	
PRE-INSPECTION FOR DIAGNOSIS	253	Diagnosis Procedure	270
Inspection Procedure		U1305 CAMERA IMAGE CALIB	271
·		DTC Logic	
ACTION TEST		Diagnosis Procedure	
Description		Diagnosis i roccadio	21 1
Inspection Procedure	254	U1308 CAMERA CONFIG	272
ADDITIONAL SERVICE WHEN REPLACIN	ıc	DTC Logic	272
REAR VIEW CAMERA		Diagnosis Procedure	272
Description		114200 DUMP UNIT CUPPENT	
Work Procedure		U1309 PUMP UNIT CURRENT	
Work Flocedure	200	DTC Logic	
REAR VIEW CAMERA CALIBRATION	256	Diagnosis Procedure	2/3
Description		U130B REAR CAMERA COMM ERROR	276
Work Procedure (Preparation)	256	DTC Logic	
Work Procedure (Target Setting)		Diagnosis Procedure	
Work Procedure (Rear View Camera Calibration	on)258		
DTC/CIRCUIT DIAGNOSIS	000	U1310 PUMP UNIT CIRCUIT	
DIC/CIRCUIT DIAGNOSIS	260	DTC Logic	
C1A03 VEHICLE SPEED SENSOR	260	Diagnosis Procedure	277
DTC Logic		POWER SUPPLY AND GROUND CIRCUIT	280
Diagnosis Procedure		Diagnosis Procedure	
		· ·	
C1A04 ABS/TCS/VDC SYSTEM		WARNING SYSTEMS SWITCH CIRCUIT	-
DTC Logic		Component Function Check	
Diagnosis Procedure	261	Diagnosis Procedure	
C1A39 STEERING ANGLE SENSOR	262	Component Inspection	282
DTC Logic		WARNING SYSTEMS ON INDICATOR CIR-	_
Diagnosis Procedure		CUIT	
		Component Function Check	
U0122 VDC P-RUN DIAG	263	Diagnosis Procedure	
DTC Logic		Component Inspection	
Diagnosis Procedure	263	Component inspection	204
HO446 VDC CHECKOUM BLAC	•••	WARNING BUZZER CIRCUIT	285
U0416 VDC CHECKSUM DIAG	264	Component Function Check	285

Diagnosis Procedure285	Diagnosis Procedure289
SYMPTOM DIAGNOSIS286	NORMAL OPERATING CONDITION290
MOD SYSTEM SYMPTOMS286	Description290
Symptom Table286	REMOVAL AND INSTALLATION291
MOD SYSTEM DOES NOT ACTIVATE287	REAR VIEW CAMERA WASHER CONTROL
Description	UNIT291
Diagnosis Procedure287	Exploded View291
MOD SYSTEM SETTINGS CANNOT BE	Removal and Installation291
TURNED ON/OFF IN VEHICLE INFORMA-	REAR VIEW CAMERA AIR PUMP MOTOR 292
TION DISPLAY289	Exploded View292
Description	Removal and Installation292

Н

Α

В

С

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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 three minutes before performing any service.

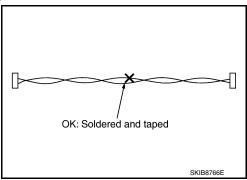
## Precautions For Harness Repair

INFOID:0000000009464647

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

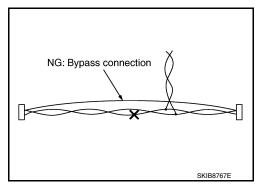
Solder the repaired area and wrap tape around the soldered area.
 NOTE:

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.

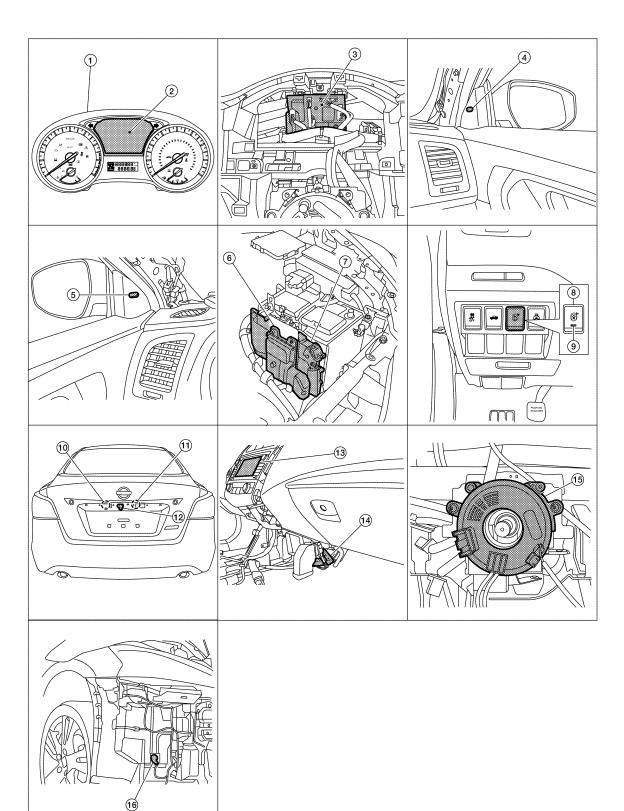


INFOID:0000000009464648

# SYSTEM DESCRIPTION

# **COMPONENT PARTS**

**Component Parts Location** 



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## **COMPONENT PARTS**

#### < SYSTEM DESCRIPTION >

### [ITS CONTROL UNIT]

- 1. Combination meter
- Blind spot warning indicator RH
- 7. **ECM**
- 10. Rear view camera washer control unit
- 13. AV control unit (center display) (with navi- 14. ITS control unit gation system and bose audio system) Audio unit (center display) (with display audio system and bose audio system)
- 16. Washer fluid level switch (view with front fascia removed)

- 2. Vehicle information display
- 5. Blind spot warning indicator LH
- 8. Warning systems switch
- 11. Rear view camera air pump motor
- (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 Description

INFOID:0000000009464649

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
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
TCM	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 (with navigation system and bose audio system)	Receives the various systems and camera signals via CAN communication and routes them to the center display
Audio unit (with display audio system and bose audio system)	Receives the various systems and camera signals 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 unit

## **SYSTEM**

# **System Description**

#### INFOID:0000000009464650

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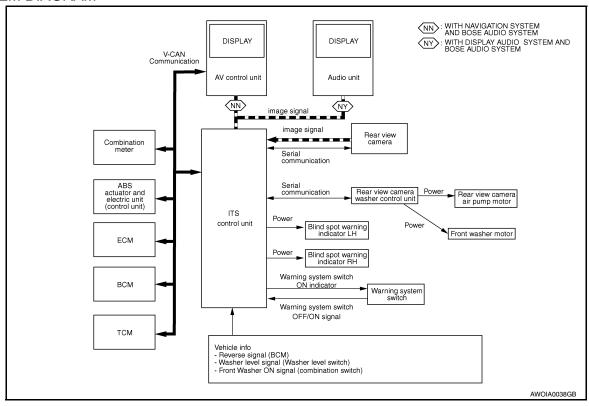
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## SYSTEM DIAGRAM



### 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	
TCM	CAN com-	Current gear position signal	Receives a current gear position	
TCM munica- tion		Shift position signal	Receives a shift selector position	
		Output shaft revolution signal	Receives the number of revolutions of output shaft	
ABS actuator	ABS actuator CAN com-	Vehicle speed signal (ABS)	Receives wheel speeds of four wheels	
and electric unit munica- (control unit) 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)	
BCM 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	

Revision: November 2013 DAS-11 2014 Altima NAM

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### < SYSTEM DESCRIPTION >

Transmit unit	Signal name		Description
		Steering angle sensor malfunction signal	Receives a malfunction state of steering angle sensor
Steering angle sensor	o o munica-	Steering angle sensor signal	Receives the number of revolutions, turning direction of the steering wheel
		Steering angle speed signal	Receives the turning angle speed of the steering wheel
AV control unit (with navigation system and bose audio sys- tem)	CAN com- munica- tion	System selection signal	Receives a selection state of each item in "Driver Assistance" selected with the navigation system
Audio unit (with display audio system and bose audio system)	olay stem System selection signal		Receives a selection state of each item in "Driver Assistance" selected with the display audio 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	me	Description	
		Meter display Own vehicle indicator signal		Transmits a signal to display a state of the system on the information display	
	CAN communication	Blind Spot Warning indicator		Transmits a Blind Spot Warning signal to turn ON the Blind Spot Warning indicator	
Combination meter		Lane Departure Warning lamp signal		Transmits a Lane Departure Warning signal to turn ON the Lane Departure Warning indicator	
		Buzzer output signal		Transmits a buzzer output signal to turn ON the buzzer of the following systems:  Moving Object Detection (MOD)  Blind Spot Warning (BSW)  Lane Departure Warning (LDW)	
Warning buzz- er	Warning buzze	ızzer signal		Activates the warning buzzer of the following systems:  Moving Object Detection (MOD)  Blind Spot Warning (BSW)  Lane Departure Warning (LDW)	
Warning sys- tems ON indi- cator	Warning syste	ms ON indicator s	signal	Turns ON the warning systems ON indicator	

## **DESCRIPTION**

• ITS\* 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-228, "System Description"	
Blind Spot Warning (BSW)	DAS-152, "System Description"	
Lane Departure Warning (LDW)	DAS-77, "System Description"	

## [ITS CONTROL UNIT]

# Fail-safe (ITS Control Unit)

INFOID:0000000009464651

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 lamp/Indicator lamp	Description	
Lane Departure Warning (LDW)	Low-pitched tone Lane Departure Warning		Cancel	
Blind Spot Warning (BSW)	High-pitched tone	Blind Spot Warning lamp	Cancel	
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 >

[ITS CONTROL UNIT]

# DIAGNOSIS SYSTEM (ITS CONTROL UNIT)

**CONSULT Function (AVM)** 

INFOID:0000000009464652

#### **CAUTION:**

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

#### 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 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 actuator 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

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

#### < SYSTEM DESCRIPTION >

[ITS CONTROL UNIT]

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Monitored item [Unit]	Description		
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		
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		
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		

## **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			
WASH ACTIVE	OFF	Activates the washer to clean the lens of real camera			
LED LH INDICATOR	ON	Flashes the left side LED light for ITS system			
LED LIN INDICATOR	OFF	Plasties the left side LED light for 113 system			
LED RH INDICATOR	ON	Flashes the right side LED light for ITS system			
LED RH INDICATOR	OFF	Plasties the right side LED light for 113 system			
AIR ACTIVE	ON	Activates the air pump to clean the lens of rear camera			
AIR ACTIVE	OFF	Activates the all pump to clean the lens of real camera			
AIR & WASH ACTIVE	ON	Activates the air pump and washer to clean the lens of rear camera			
AIR & WASH ACTIVE	OFF	Activates the all pump and washer to clean the lens of real 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
BOW 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.

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INFOID:0000000009464653

# **ECU DIAGNOSIS INFORMATION**

# ITS CONTROL UNIT

Reference Value

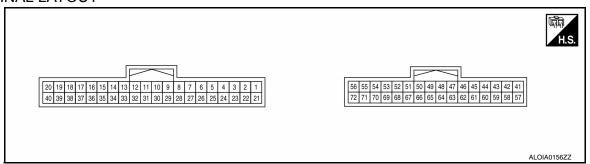
## VALUES ON THE DIAGNOSIS TOOL

Monitor item		Condition	Value/Status
ST ANGLE SENSOR	Ignition switch ON	Steering angle signal is received	On
SIGNAL	Igrillion switch ON	Steering angle signal is not received	Off
DEVEDOE CIONAL	Ignition switch ON	Shift selector in R (reverse)	On
REVERSE SIGNAL	Ignition switch ON	Shift selector is not in R (reverse)	Off
VEHICLE SPEED	M/bilo driving	Vehicle speed signal is received	On
SIGNAL	While driving	Vehicle speed signal is not received	Off
CAMERA SWITCH	Ignition switch ON	Camera switch is pressed	On
SIGNAL	Igrillion switch ON	Camera switch is not pressed	Off
CAMERA OFF SIG-	Ignition switch ON	Purpose switch is pressed	On
NAL	Igrillion Switch ON	Purpose switch is not pressed	Off
ST ANGLE SENSOR	Ignition switch ON	Steering angle sensor type is displayed	Absolute
TYPE	Igrillion switch ON	Steering angle sensor type is not received	Not
STEERING GEAR	Ignition switch ON	Pattern 1 type of steering gear ratio displayed	Pattern 1
RATIO TYPE	Igrillion Switch ON	Pattern 2 type of steering gear ratio displayed	Pattern 2
STEERING POSI-	Ignition quitab ON	It recognizes steering position is left	LHD
TION	Ignition switch ON	It recognizes steering position is right	RHD
R-CAMERA COMM	Ignition quitab ON	Rear camera serial status is OK	OK
STATUS	Ignition switch ON	Rear camera serial status is not OK	NG
R-CAMERA COMM	Inviting suitab ON	Rear camera serial communication signal is received	OK
LINE	Ignition switch ON	Rear camera serial communication signal is not received	NG
ILL	Ignition quitab ON	Illumination is ON	On
ILL	Ignition switch ON	Illumination is OFF	Off
ITO CVA 4	Ignition quitab ON	ITS switch is pressed	On
ITS SW 1	Ignition switch ON	ITS switch is not pressed	Off
ITC CW 4 IND	Ignition quitab ON	Indicator of ITS switch 1 is lighting	On
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	N
		Turn signal right is received	Right
REAR CAMERA IM-	Ignition quitals ON	Camera image signal is received	On
AGE SIGNAL	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
MACH CW	lanition cuitale CN	Wash switch signal is pressed	On
WASH SW	Ignition switch ON	Wash switch signal is not pressed	Off
PUMP COMM STA-	Ignition quitals ON	Pump communication signal is received	On
TUS	Ignition switch ON	Pump communication signal is not received	Off

Revision: November 2013 DAS-17 2014 Altima NAM

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## TERMINAL LAYOUT



## PHYSICAL VALUES

	nal No. color)	Description			Condition	Value
+	_	Signal name	Input/ Output	Input/		(Approx.)
1	Ground	ound Washer level switch	Input	Ignition	When washer fluid is low (switch closed)	0 V
(BR)	Ground	Washer level switch	Input	switch ON	When washer fluid is not low (switch open)	12 V
2 (G)	Ground	Washer signal pump to camera	Input	Ignition sw	itch ON	5 V
3 (W)	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)	Giouria	SOW LED SIGNAL K	Output	driving	LDW/BSW is not detected	0 V
20 (G)	Ground	Battery supply	Input	_	_	12 V
22 (P)	Ground	Serial ground	Output	_	_	0 V
27 (L)	Ground	CAN -H	_	_	_	_
28	28 Ground	Reverse	Input	Ignition switch ON	Shift selector in R (reverse)	12 V
(R)	Ground				Shift selector not in R (reverse)	0 V
32	Ground	Cancel SW output	Input	Ignition	Cancel switch pressed	0 V
(P)	Cround	Cancer Ovv Catput	Прис	switch ON	Cancel switch not pressed	12 V
33	Ground	LED input	Output	Ignition	Warning system is ON	12 V
(BG)	Sibulia	гер прис	Calput	switch ON	Warning system is OFF	0 V
37	Ground	SOW LED signal L	Output	While	LDW/BSW detected	12 V
(W)	Sibulia	JOW LLD Signal L	Calput	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	Shield —		_	0 V
51 (R)	Ground	RR CAM GND	Output	Ignition switch ON	_	0 V

## ITS CONTROL UNIT

## < ECU DIAGNOSIS INFORMATION >

## [ITS CONTROL UNIT]

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	nal No. color)			Condition	Value (Approx.)
+	_			Condition	
52 (W)	Ground	RR CAM ON	Output	Ignition switch ON	6 V
66 (B)	Ground	RR CAM COMP +	Input	Ignition switch ON	(V) 1 0 -1 -40 μs ALOIA0179ZZ
68 (G)	Ground	RR CAM CONT	Input	Ignition switch ON	5 V
69 (B)	Ground	RR CAM COMP +	Input	Ignition switch ON	(V) 1 0 -1 -40 µs ALOHA0179ZZ

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
Moving Object Detection (MOD)	Low-pitched tone	Warning lamp MOD icon (on camera screen)	Cancel

# **DTC Inspection Priority Chart**

INFOID:0000000009464655

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	C1A03: VHCL SPEED SE CIRC C1A04: VDC FAIL U0122: VDC P-RUN DIAG U0416: VDC CHECKSUM DIAG

Revision: November 2013 DAS-19 2014 Altima NAM

DTC Index

#### 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 → 1 → 2 ··· 38 → 49 after returning to the normal condition whenever the ignition switch OFF → ON. It returns to 0 when a malfunction is detected again in the process.
- If it is over 49, it is fixed to 49 until the self-diagnosis results are erased.

#### Systems for fail-safe

- A: Lane Departure Warning (LDW)
- · B: Blind Spot Warning (BSW)
- C: Moving Object Detection (MOD)

DTC		V	Narning lam	пр	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-42
C1A04	VDC FAIL	ON	ON	ON	A, B, C	DAS-43
C1A39	STRG SEN CIR	ON	ON	ON	A, B, C	DAS-44
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-45
U0416	VDC CHECKSUM DIAG	ON	ON	ON	A, B, C	DAS-46
U0428	STRG SEN CAN CIR 2	ON	ON	ON	A, B, C	DAS-47
U1000 <sup>NOTE</sup>	CAN COMM CIRCUIT	ON	ON	ON	A, B, C	DAS-48
U1010	CONTROL UNIT (CAN)	ON	ON	ON	A, B, C	DAS-49
U111A	REAR CAMERA IMAGE SIGNAL	ON	ON	ON	A, B, C	DAS-50
U1232	ST ANGLE SEN CALIB	ON	ON	ON	A, B, C	DAS-52
U1305	CAMERA IMAGE CALIB	ON	ON	ON	A, B, C	DAS-53
U1308	CAMERA CONFIG	ON	ON	ON	A, B, C	DAS-54
U1309	PUMP UNIT CURRENT	ON	ON	ON	A, B, C	DAS-55
U130B	REAR CAMERA COMM ERROR	ON	ON	ON	A, B, C	DAS-58
U1310	PUMP UNIT CIRCUIT	ON	ON	ON	A, B, C	DAS-59

#### NOTE:

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

## ITS CONTROL UNIT

## < ECU DIAGNOSIS INFORMATION >

[ITS CONTROL UNIT]

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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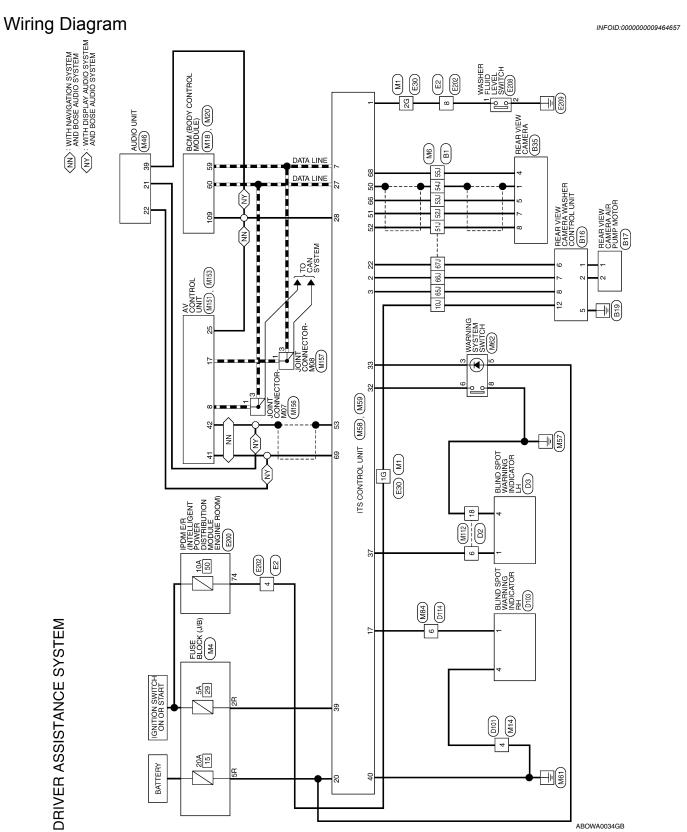
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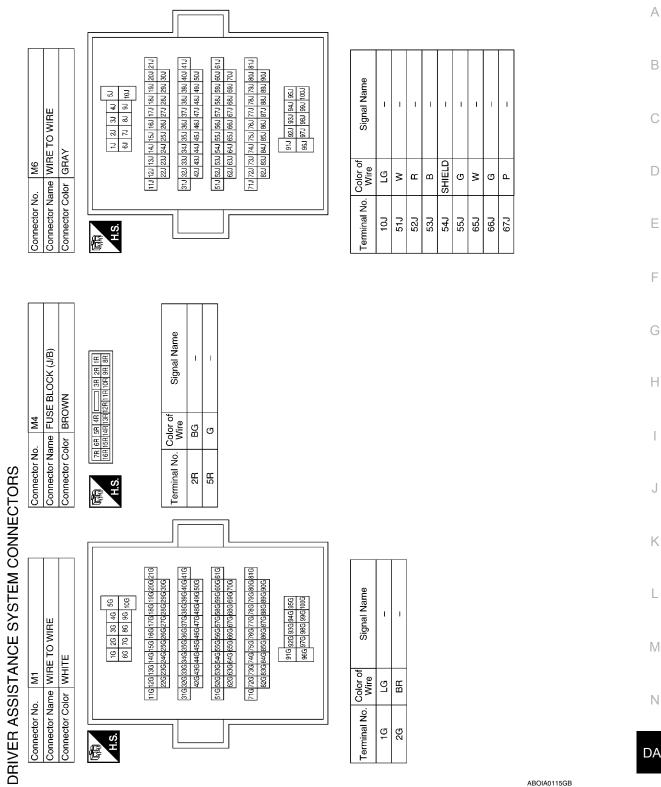
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# WIRING DIAGRAM

# DRIVER ASSISTANCE SYSTEMS



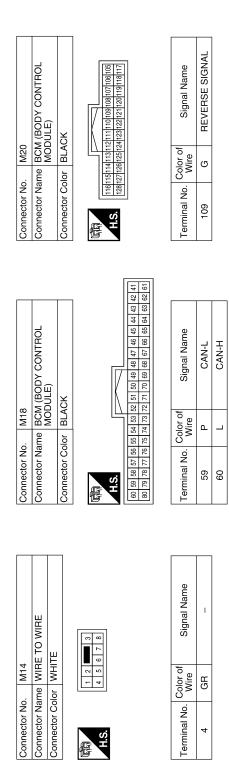


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**DAS-23** Revision: November 2013 2014 Altima NAM



M46   AUDIO UNIT (WITH DISPLAY AUDIO SYSTEM AND BOSE AUDIO SYSTEM AND BOSE AUDIO SYSTEM)   AUDIO SYSTEM AND BOSE AUDIO SYSTEM)   AUDIO SYSTEM AND BOSE AUDIO SYSTEM AND BOSE AUDIO SYSTEM AND BOSE AUDIO SYSTEM AUD
26 27 28 29 30 31 32 33 34 35 42 42 43 44 45 46 47 48 49 50 51
AUDIO UNIT (WITH DISPLAY THE AUDIO SYSTEM AND BOSE AUDIO SYSTEM)

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Signal Name	ı	ı	ı	CAN-H	REV	ı	I	I	CANCEL SW OUTPUT	LED INPUT	I	ı	I	SOW LED SIGNAL L	1	IGN	GND
Color of Wire	ı	-	1	٦	Я	1	ı	1	Ь	BG	1	ı	1	Μ	1	BG	В
Terminal No.	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

Signal Name	CAN-L	ı	1	ı	ı	1	ı	I	ı	ı	SOW LED SIGNAL R	1	I	B+	1	SERIAL GND	ı
Color of Wire	۵	ı	ı	ı	ı	ı	ı	ı	ı	ı	ŋ	ı	ı	ŋ	ı	Ь	ı
Terminal No.	7	8	6	10	11	12	13	14	15	16	17	18	19	20	21	22	23

				2 1 22 21							
	ITS CONTROL UNIT	TE		12   11   10   9   8   7   6   5   4   3   32   31   30   29   28   27   26   25   24   23	Signal Name	WASH LVL SW	FROM PUMP TO CAMERA C/U	FROM CAMERA C/U TO PUMP	-	I	ı
M58	_	or WHITE		14 13 34 33	Color of Wire	BB	5	>	1	ı	ı
Connector No.	Connector Name	Connector Color	南 H.S.	20     19     18     17     16     15       40     39     38     37     36     35	Terminal No.	-	2	င	4	5	9

Signal Name	1	I	ı	1	-	1	ı	RR CAM COMP +	1	RR CAM CONT	COMP OUT +	1	ı	1
Color of Wire	ı	ı	ı	1	1	ı	ı	В	1	ŋ	В	ı	ı	ı
Terminal No.	59	09	61	62	63	64	65	99	29	89	69	70	71	72

Signal Name	1	I	ı	1	ı	RR CAM GND	RR CAM ON	ı	ı	ı	I	1	ı
Color of Wire	ı	ı	ı	I	SHIELD	ш	8	SHIELD	_	ı	-	ı	ı
Terminal No.	46	47	48	49	50	51	52	53	24	55	99	22	58

			57							
0	ITS CONTROL UNIT	ITE	52 51 50 49 48 47 46 45 44 43 42 68 67 66 65 64 63 62 61 60 59 58		Signal Name	1	-	1	ı	-
M29	ne ITS	or WH	56 55 54 53 to 72 71 70 69 (	:	Color of Wire	1	ı	-	1	1
Connector No.	Connector Name	Connector Color WHITE	S)		Terminal No.	41	42	43	44	45

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Connector Name | WARNING SYSTEM SWITCH

M62

Connector No.

Connector Color GRAY

Connector No.   M84		ı					
Connector No.   Connector Name   Connector Name   Connector Color   Connector Colo	2	RE TO WIRE	ТЕ	7 18 19 20 21 22 23 24		ı	1
O WIRE    19 20 21 22 23 24   19 20 21   22 23 24   24   25   24   24   25   24   24	M	ne WIF	or WH	15	Solor of Wire	≥	В
O WIRE    19   20   21   22   24     19   20   21   22   24     Signal Name	Connector No.	Connector Nan	Connector Colc	S G	Terminal No.	9	18
		ne WIRE TO WIRE	or WHITE	3 4 5 6 7 8 9 15 16 17 18 19 20 21			

Signal Name

Terminal No.

BG

8 2 2 3

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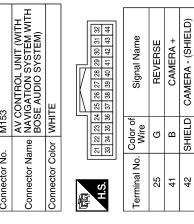
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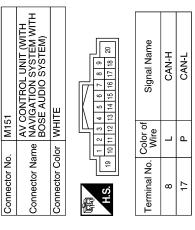
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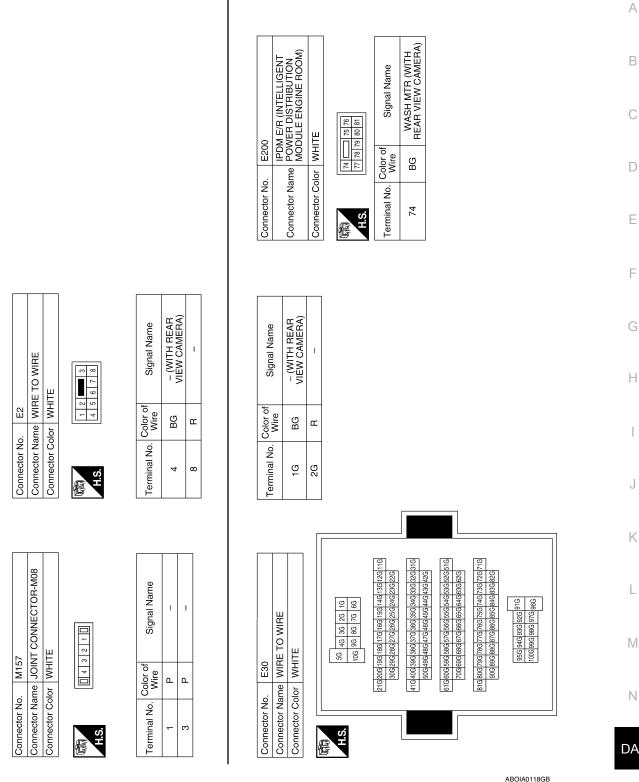
MICO CONTROL MACE
Connector Color
Terminal No. Wire





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### [ITS CONTROL UNIT]



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							Connector No 1816	4	WASHER CONTROL UNIT	Connector Color WHITE		(5 4 ( ) 3 2 1	H.S.	Terminal No. Color of Signal Name	1 V PUMP MOTOR +	2 BR PUMP MOTOR -	5 B GND	6 P SERIAL GND	7 G FROM PUMP TO CAMERA C/U	8 W FROM CAMERA C/U TO PUMP	12 W IGN	
Connector No. E208 Connector Name WASHER FLUID LEVEL	SWITCH	Connector Color BLACK	H.S.	Terminal No. Color of Signal Name	т а	<u> </u>	to role	Terminal No. Wire Signal Name	10J W -	51J W –	52J B –	53J R –	54J SHIELD –	 - M 65J		67J P – 67J						
Connector Name WIRE TO WIRE	Connector Color WHITE		H.S. (3 (7 6 5 4)	Terminal No. Color of Signal Name	4 BG REAR VIEW CAMERA)	8 8 E	Connector No.   B1	e	Connector Color GBAY			50 41 31 21 11	10, 90 80 7.	21.0 200 150 150 151 151 150 150 150 150 150	30) 230 230 230 230 240 230 250	41.1 40.1 39.1 38.1 37.1 38.1 35.1 39.1 32.1 31.1	177+ 166+ 164+ 166+ 164+ 166+ 166+ 166+ 166	61.1 60.1 59.1 58.1 57.1 56.1 55.1 54.1 53.1 52.1 51.1	70. (83.) (8	90.1 89.1 87.1 86.1 85.1 84.1 83.1 85.1 85.1 85.1 85.1 85.1 85.1 85.1 85	06   00   00   00	

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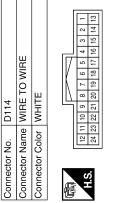
		_							
	TO WIRE		7 6 5 4 3 2 1 19 18 17 16 15 14 13	Signal Name	ı	I			
DS	me WIRE lor WHIT		24 23 22 21 20	Color of Wire	۵	В			
Connector No. D2	Connector Name WIRE TO WIRE Connector Color WHITE		H.S. 24	Terminal No. Wire	9	18			
		7							
	Connector Name REAR VIEW CAMERA Connector Color WHITE		6 5 1	Signal Name	ı	ı	1	ı	ı
B35	ne REAl		8 7	Color of Wire	SHIELD	g	œ	В	*
Connector No.	Connector Name REAR \		(南) H.S.	Terminal No. Wire	-	4	5	7	8
							1		
	Connector Name   REAR VIEW CAMERA   AIR PUMP MOTOR	TE	\[\tag{\times}{\tau}\]	Signal Name	ı	ı			
. B17	me REAI AIR F	or WHI		Color of Wire	>	BR			
Connector No.	onnector Nai	Connector Color WHITE	雨 H.S.	Terminal No. Wire	-	2			

	T WARNING RH			Signal Name	ı	ı	
Connector No. D103	Connector Name BLIND SPOT WARNING INDICATOR RH	Connector Color WHITE	1 2 8 1 2 2 1	Terminal No. Color of Si	Я	B t	
Conne	Conne	Conne	高 H.S.	Termi			
	E TO WIRE	!	7 6 5 2 1	Signal Name	ı		
Connector No. D101	Connector Name WIRE TO WIRE Connector Color WHITE		8 8	o. Wire	В		
Connector	Connector Connector (		斯 H.S.	Terminal No. Wire	4		
							]
	vame BLIND SPOT WARNING INDICATOR LH		2 8	Signal Name	ı	I	
No. D3	me BLIN INDIC	Color WHITE	4	Color of Wire	۵	В	
_	lα	ΙŌ	1		-	-	1

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Signal Name	_	
Color of Wire	В	
Terminal No.	9	

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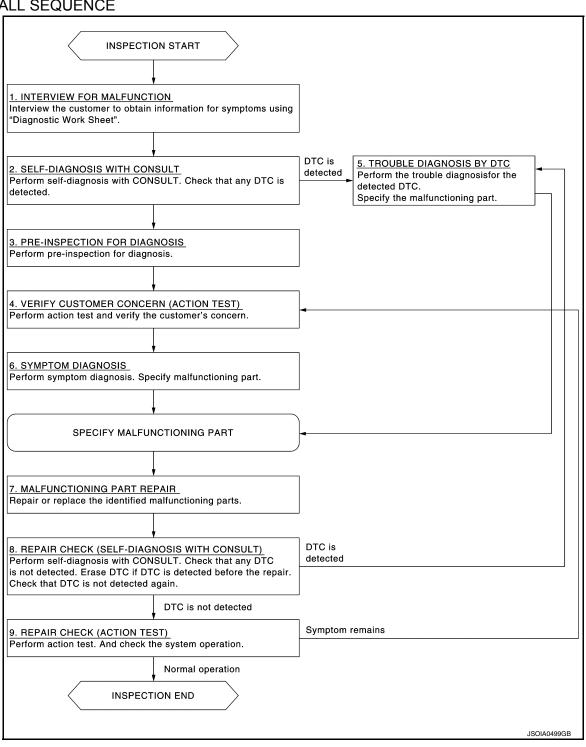
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# **BASIC INSPECTION**

## DIAGNOSIS AND REPAIR WORK FLOW

Work Flow INFOID:0000000009464658

#### **OVERALL SEQUENCE**



### **DETAILED FLOW**

## 1.INTERVIEW FOR MALFUNCTION

Interview the customer to obtain information about symptoms using "Diagnostic Work Sheet". (Refer to DAS-32, "Diagnostic Work Sheet".)

INFOID:0000000009464659

>> GO TO 2.

# $2.\mathsf{self} ext{-}\mathsf{Diagnosis}$ 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-34, "Inspection Procedure".

>> GO TO 4.

## 4. ACTION TEST

Perform LDW system action test to check the operation status. Refer to <u>DAS-35</u>, "<u>Description</u>".

>> GO TO 6.

## TROUBLE DIAGNOSIS BY DTC

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

>> GO TO 7.

## 6. SYMPTOM DIAGNOSIS

Perform symptom diagnosis. Specify malfunctioning part. Refer to DAS-137, "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.

## DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

[ITS CONTROL UNIT]

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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	SAMP	'LE
------	-------	------	-----

		Model and Year		VIN		
Engine #		Trans.		Mileage		
Incident Date		Manuf. Date		In Service Date		
Symptoms						
	Lane departure warning lamp	☐ Stays ON ☐ Turned ON occasion	☐ Stays ally ☐ Othe			
Indicator/Warning lamps	☐ Warning systems ON indicator	☐ Stays ON	☐ Stays ☐ Othe			
	Other lamps	☐ Stays ON ☐ Turned ON occasion	☐ Stays ally ☐ Othe			
	☐ When using LDW					
Functions	☐ All functions do not opera☐ Warning function does not☐ Yawing function does not☐ Yawing function does not☐	ot operate. ( \sum No sou operate. (Warning functi		1.)		
	☐ Functions	the course in the turn si function when driving on when driving in a lane. in a different position fro	lane markers.			
Conditions						
Frequency	☐ Continuously	☐Interm	ittently			
Light conditions		☐ At night ☐ Backlight	☐ Sunrise/s	sunset (Strong light)		
	☐ In the daytime					
Light conditions	☐ In the daytime ☐ Direct light ☐ Not affected ☐ Vehicle speed ☐ Not affected	□ Backlight	☐ Others (	s stopped		
Light conditions  Driving conditions	☐ In the daytime ☐ Direct light ☐ Not affected ☐ Vehicle speed ☐ Not affected ☐ Fine ☐ Clouding ☐ Not affected ☐ Highway	□ Backlight  MPH ( km/h)	☐ Others (☐ Vehicle in ☐ Snowing	s stopped		
Light conditions  Driving conditions  Weather conditions	☐ In the daytime ☐ Direct light ☐ Not affected ☐ Vehicle speed ☐ Not affected ☐ Fine ☐ Clouding ☐ Not affected ☐ Highway ☐ Uneven roads ☐ Not affected ☐ Not affected	☐ Backlight  MPH ( km/h)  ☐ Raining  ☐ In town	Others (	s stopped		

**DAS-33** Revision: November 2013 2014 Altima NAM

### PRE-INSPECTION FOR DIAGNOSIS

< BASIC INSPECTION >

[ITS CONTROL UNIT]

## PRE-INSPECTION FOR DIAGNOSIS

## Inspection Procedure

INFOID:0000000009464660

# 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-38</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**

#### < BASIC INSPECTION >

[ITS CONTROL UNIT]

### **ACTION TEST**

Description INFOID:0000000009464661

- Perform action test to verify the customer's concern.
- Perform action test and check the system operation after system diagnosis.

#### WARNING:

Be careful of traffic conditions and safety around the vehicle when performing road test. **CAUTION:** 

- Fully understand the following items well before the road test;
- Precautions: Refer to <u>DAS-73</u>, "Precaution for <u>LDW System Service"</u>.
- System description for LDW: Refer to DAS-77, "System Description".
- System description for BSW: Refer to <a href="DAS-152">DAS-152</a>, "System Description".
- System description for MOD: Refer to DAS-228, "System Description".
- Handling precaution: Refer to DAS-82, "Precautions for Lane Departure Warning".

## Inspection Procedure

WARNING:

Be careful of traffic conditions and safety around the vehicle when performing road test. **CAUTION:** 

- Fully understand the following items well before the road test;
- Precautions: Refer to <u>DAS-73</u>, "<u>Precaution for LDW System Service</u>".
- System description for LDW: Refer to <a href="DAS-77">DAS-77</a>, "System Description".
- System description for BSW: Refer to DAS-152, "System Description".
- System description for MOD: Refer to DAS-228, "System Description".
- Handling precaution: Refer to DAS-232, "Precautions for Moving Objects Detection".

## CHECK LDW SYSTEM SETTING

- Start the engine.
- Check that the LDW system setting can be enabled/disabled on the vehicle information display.
- Turn OFF the ignition switch and wait for 30 seconds or more.
- Check that the previous setting is saved when the engine starts again.

#### >> GO TO 2.

## 2.action test for LDW

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

Vehicle o	condition/ Driver's operation	Action	Warning sys- tems ON indi- cator	Indication on the combination meter	Buzzer
Less than Approx. 60 km/h (40 MPH)	Close to lane marker	No action	ON	White ALOIA0191GB	_

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INFOID:0000000009464662

Revision: November 2013

**DAS-35** 

## **ACTION TEST**

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  • Buzzer sounds  • Warning lamp blinks	ON	White (Orange) White Blink ALOIA0190GB	Short continuous beeps
MPH) or more	Close to lane marker     Turn signal ON (Deviate side)	No action	ON	WhiteALOIA0191GB	_

### 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-77</u>, "System Description".

>> Inspection End.

# ADDITIONAL SERVICE WHEN REPLACING REAR VIEW CAMERA

< BASIC INSPECTION > [ITS CONTROL UNIT]

ADDITIONAL SERVICE WHEN REPLACING REAR VIEW CAMERA	٨
Description	Α
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.	В
Work Procedure	С
1. CAMERA AIMING ADJUSTMENT  Perform the camera aiming adjustment with CONSULT. Refer to DAS-38, "Description".	D
>> GO TO 2.  2.PERFORM SELF-DIAGNOSIS	Е
Perform the self-diagnosis of rear view camera with CONSULT. Check if any DTC is detected.  Is any DTC detected?  NEC. As Parform the trouble diagnosis for the datasted DTC. Defer to DAS 20. "IDTC index!"	F
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	G
<ol> <li>Perform the LDW/BSW system action test. Refer to <u>DAS-35</u>, "<u>Description</u>".</li> <li>Check that the LDW/BSW system operates normally.</li> <li>Is the inspection result normal?</li> <li>YES &gt;&gt; Inspection End.</li> </ol>	Н
NO >> GO TO 4.  4.LDW/BSW ACTIVE TEST	I
<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>	J
<ul> <li>(1) Washer fluid output count on the rear view camera is 3 to 5 times → OK</li> <li>(2) Washer fluid output count on the rear view camera is 10 times → Check tube with yellow marking</li> <li>(3) Washer fluid output count on the rear view camera is 1 time → Check tube with green marking</li> <li>(4) No washer fluid output → Check tube with blue marking or check valve</li> </ul>	K L
>> Inspection End.	M
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[ITS CONTROL UNIT]

## 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:0000000009464666

# 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:

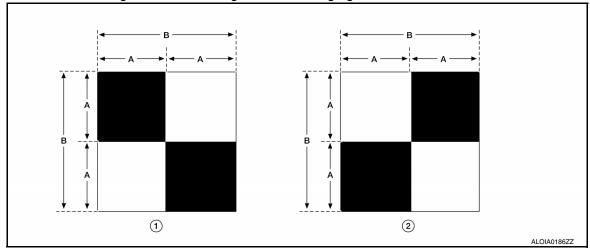
Select the "AVM" to diagnose the ITS control unit by CONSULT.

- 1. Perform pre-inspection for diagnosis. Refer to <a href="DAS-34">DAS-34</a>, "Inspection Procedure".
- 2. Adjust the tire pressure to the specified pressure value.
- Maintain no-load in vehicle.
- Check if coolant and engine oil are filled up to correct level and fuel tank is full.
- 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.
- 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)

[ITS CONTROL UNIT]

>> Refer to DAS-39, "Work Procedure (Target Setting)".

## Work Procedure (Target Setting)

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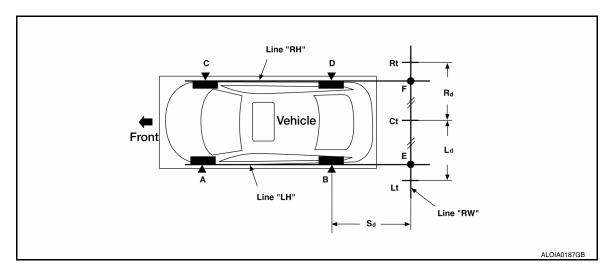
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#### **CAUTION:**

- 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.)

### 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)

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

- 3. Mark point "E" on the line "LH" at the positions 2125 mm (83.66 in) from point "B".
- 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".
- 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".
- Position the center of the target mark to point of "Ct".

String Wheel center Cone

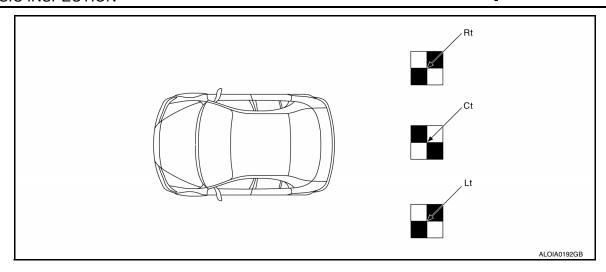
Mark a point

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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-40, "Work Procedure (Rear View Camera Calibration)".

Work Procedure (Rear View Camera Calibration)

INFOID:000000000946466

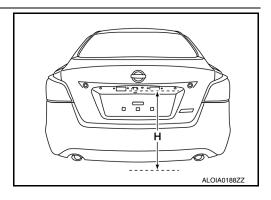
#### **CAUTION:**

Perform the calibration under the specified vehicle condition (fuel full, no-load, specified tire pressure, etc.). Refer to <u>DAS-38</u>, "Work <u>Procedure (Preparation)"</u>.

1. CHECK REAR VIEW CAMERA HEIGHT

Measure the rear view camera height "H".

>> GO TO 2.



# $2.\mathsf{REAR}$ VIEW CAMERA CALIBRATION

- 1. Select "Work Support" on "AVM" with CONSULT.
- 2. Select "REAR CAMERA ITS".
- 3. Select "OK".

### **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.
- 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.
- 8. Confirm the displayed item.
- "Completed": Select "Completion".
- Otherwise, perform the following services:

### **REAR VIEW CAMERA CALIBRATION**

< BASIC INSPECTION >

[ITS CONTROL UNIT]

ed item	Possible cause	Service procedure
_	Temporary malfunction in internal processing of the rear view camera.	Go back to Step 1
00H Routine not activated	Rear view camera unit malfunction.	Position the target appropriately 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 DAS-39, "Work Procedure (Target Setting)".
_	A target is not-yet-placed. (The rear view camera cannot detect a target.)	Position the target appropriately again. Perform the aiming again. Refer to DAS-38. "Work Procedure (Preparation)".
_	<ul> <li>The position of the rear view camera is not correct.</li> <li>Inappropriate work environment.</li> <li>Inappropriate vehicle condition.</li> </ul>	
	— 00H Routine not activated	Temporary malfunction in internal processing of the rear view camera.  OOH Routine not activated  Rear view camera unit malfunction.  Temporary malfunction in internal processing of the rear view camera.  Rear view camera.  Rear view camera malfunction.  A target is not-yet-placed. (The rear view camera cannot detect a target.)  The position of the rear view camera is not correct. Inappropriate work environment.

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 <a href="DAS-35">DAS-35</a>, "Description".

>> Work End.

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[ITS CONTROL UNIT]

# DTC/CIRCUIT DIAGNOSIS

## C1A03 VEHICLE SPEED SENSOR

DTC Logic INFOID:0000000009464669

#### 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.	ABS actuator and electric unit (control unit)     ITS control unit

### DTC CONFIRMATION PROCEDURE

# 1.perform dtc confirmation procedure

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

### Is "C1A03" detected as the current malfunction?

>> Refer to <u>DAS-42</u>, "<u>Diagnosis Procedure</u>". >> Refer to <u>GI-43</u>, "<u>Intermittent Incident</u>". YES

NO

### Diagnosis Procedure

INFOID:0000000009464670

# 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-45. "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-128, "Removal and Installa-
- NO >> Replace ITS control unit. Refer to DAS-68, "Removal and Installation".

### C1A04 ABS/TCS/VDC SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[ITS CONTROL UNIT]

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INFOID:0000000009464672

## C1A04 ABS/TCS/VDC SYSTEM

DTC Logic

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition Possible cau-	
C1A04	VDC CIRCUIT	ITS control unit receives the message that means "VDC is failed" from ABS actuator and electric unit (control unit).	ABS actuator and electric unit (control unit)     ITS control unit

#### DTC CONFIRMATION PROCEDURE

# 1. PERFORM DTC CONFIRMATION PROCEDURE

- 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 <u>DAS-43</u>, "<u>Diagnosis Procedure</u>".

NO >> Inspection End.

## 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. Refer to BRC-45, "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. <u>Is any DTC detected?</u>

YES >> Replace ABS actuator and electric unit (control unit). Refer to <a href="BRC-128">BRC-128</a>, "Removal and Installation".

NO >> Replace ITS control unit. Refer to <a href="DAS-68">DAS-68</a>, "Removal and Installation".

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Revision: November 2013 DAS-43 2014 Altima NAM

### **C1A39 STEERING ANGLE SENSOR**

< DTC/CIRCUIT DIAGNOSIS >

[ITS CONTROL UNIT]

## C1A39 STEERING ANGLE SENSOR

DTC Logic

#### 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.	Steering angle sensor     ITS 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 "C1A39" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".

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

YES >> Refer to <u>DAS-44, "Diagnosis Procedure"</u>. NO >> Refer to GI-43, "Intermittent Incident".

### Diagnosis Procedure

INFOID:0000000009464674

# 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-45, "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-132</u>, "Removal and Installation".

NO >> Replace ITS control unit. Refer to <a href="DAS-68">DAS-68</a>, "Removal and Installation".

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

### < DTC/CIRCUIT DIAGNOSIS >

[ITS CONTROL UNIT]

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INFOID:0000000009464676

## U0122 VDC P-RUN DIAG

DTC Logic

### 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.
- 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 <u>DAS-45, "Diagnosis Procedure"</u>.

NO >> Refer to GI-43, "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 >> Replace the ABS actuator and electric unit (control unit). Refer to <u>BRC-128, "Removal and Installation"</u>.

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Revision: November 2013 DAS-45 2014 Altima NAM

### **U0416 VDC CHECKSUM DIAG**

< DTC/CIRCUIT DIAGNOSIS >

[ITS CONTROL UNIT]

## U0416 VDC CHECKSUM DIAG

DTC Logic

#### 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.
- 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 <u>DAS-46, "Diagnosis Procedure"</u>. NO >> Refer to GI-43, "Intermittent Incident".

## Diagnosis Procedure

INFOID:0000000009464678

# 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.

# $2. \mathsf{CHECK}$ 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-128</u>, "Removal and Installation".

### **U0428 STEERING ANGLE SENSOR**

< DTC/CIRCUIT DIAGNOSIS >

[ITS CONTROL UNIT]

# 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.

# **Diagnosis Procedure**

INFOID:0000000009464680

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 <a href="BRC-33">BRC-33</a>, "CON-SULT Function (ABS)".

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[ITS CONTROL UNIT]

### U1000 CAN COMM CIRCUIT

Description INFOID:000000009464681

#### 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

#### 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 communication signal for 2 seconds or more	CAN communication system     ITS communication system

#### NOTE:

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

# Diagnosis Procedure

INFOID:0000000009464683

# 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-48</u>, "<u>Description</u>".

NO >> Refer to GI-43, "Intermittent Incident".

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

### < DTC/CIRCUIT DIAGNOSIS >

[ITS CONTROL UNIT]

# U1010 CONTROL UNIT (CAN)

Description INFOID:0000000000464684

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
U1010	CONTROL UNIT (CAN)	If ITS control unit detects malfunction by CAN controller initial diagnosis	ITS control unit

## Diagnosis Procedure

INFOID:0000000009464686

# 1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn the MAIN switch of ITS system ON.
- Perform "All DTC Reading" with CONSULT.
- 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-68</u>, "Removal and Installation".

NO >> Inspection End.

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

< DTC/CIRCUIT DIAGNOSIS >

[ITS CONTROL UNIT]

# U111A REAR CAMERA IMAGE SIGNAL CIRCUIT

DTC Logic

### 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:0000000009464688

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

# 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	ITS control unit		Camera	Continuity
Connector	Terminal	Connector Terminal		Continuity
M59	51	B35	7	Yes
IVIJ	52	D33	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

- Connect the ITS control unit connector and rear camera connector.
- 2. Turn the ignition switch ON.
- Check voltage between ITS control unit harness connector and ground.

Terminal					
(+) ITS control unit			Condition	Voltage (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 <a href="DAS-68">DAS-68</a>, "Removal and Installation".

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

### < DTC/CIRCUIT DIAGNOSIS >

[ITS CONTROL UNIT]

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# 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	ITS control unit Rear View Camera		Continuity	
Connector	Terminal	Connector Terminal		Continuity
M59	50	B35	1	Yes
MOS	66	555	5	163

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
IVIOS	66	1	110

### 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				
(	(+)		(–)		Voltage
	ITS contro		ntrol unit		(Approx.)
Connector	Terminal	Connector	Terminal		
M59	66	M59	50	"CAMERA" switch is ON or shift selector is in R (Reverse)	(V) 1 0 -1 -40 μs ALOIA0179ZZ

### Is inspection result normal?

YES >> Replace ITS control unit. Refer to <u>DAS-68</u>, "Removal and Installation".

NO >> Replace rear view camera. Refer to DAS-69, "Removal and Installation".

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Revision: November 2013 DAS-51 2014 Altima NAM

### **U1232 STEERING ANGLE SENSOR**

< DTC/CIRCUIT DIAGNOSIS >

[ITS CONTROL UNIT]

## U1232 STEERING ANGLE SENSOR

DTC Logic

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.	Steering angle sensor     ITS control unit

## Diagnosis Procedure

INFOID:0000000009464690

# 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</u>, "<u>CONSULT</u> <u>Function (AVM)</u>".
- 3. Check "Self Diagnostic Result" of "AVM" with CONSULT. Refer to DAS-14, "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 <a href="DAS-68">DAS-68</a>, "Removal and Installation".

NO >> Repair or replace malfunctioning parts.

### **U1305 CAMERA IMAGE CALIB**

< DTC/CIRCUIT DIAGNOSIS >

[ITS CONTROL UNIT]

## U1305 CAMERA IMAGE CALIB

DTC Logic

### 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:0000000009464692

# 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-14</u>, "CONSULT Function (AVM)". If problem persists, repair or replace the malfunctioning part.

NO >> Refer to GI-43, "Intermittent Incident".

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### **U1308 CAMERA CONFIG**

< DTC/CIRCUIT DIAGNOSIS >

[ITS CONTROL UNIT]

# **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:0000000009464694

# 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>, "CONSULT Function (AVM)".

NO >> Refer to GI-43, "Intermittent Incident".

< DTC/CIRCUIT DIAGNOSIS >

[ITS CONTROL UNIT]

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INFOID:0000000009464696

## U1309 PUMP UNIT CURRENT

DTC Logic INFOID:0000000009464695

#### 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	Rear view camera washer control unit     Harness     ITS control unit

#### DTC CONFIRMATION PROCEDURE

# 1. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON.
- Perform "All DTC Reading" with CONSULT. 2.
- Check if the "U1309" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".

### Is "U1309" detected as the current malfunction?

>> Refer to DAS-55, "Diagnosis Procedure". YES

NO >> Inspection End.

## Diagnosis Procedure

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

# $1.\mathsf{check}$ rear view camera air pump motor power supply circuit

- Disconnect the rear view camera washer control unit connector.
- 2. Turn the ignition switch ON.
- Check voltage between rear view camera washer control unit connector and ground.

Terminal				
(+)				Voltage (Approx.)
Rear view camera washer control unit		(–)	Condition	
Connector	Terminal			
B16	12	Ground	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

Turn the ignition switch OFF.

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

Disconnect the ITS control unit connector.

**DAS-55** Revision: November 2013 2014 Altima NAM DAS

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### **U1309 PUMP UNIT CURRENT**

### < DTC/CIRCUIT DIAGNOSIS >

[ITS CONTROL UNIT]

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	Terminal	Connector Terminal		
M58	2	B16	7	Yes
IVISO	3	БЮ	8	165

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

ITS cor	ntrol unit		Continuity
Connector	Terminal	Ground	Continuity
MEO	2	Ground	No
M58	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	Terminal	Connector Terminal		
B16	1	B17	1	Yes
ь10	2	БП	2	165

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

Rear view camera	washer control unit		Continuity
Connector	Terminal	Ground	Continuity
D16	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.

# 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.
- 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 >

[ITS CONTROL UNIT]

	Terminal			
(-	+)			Voltage
	mera 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 <u>DAS-68</u>, "Removal and Installation".

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### **U130B REAR CAMERA COMM ERROR**

< DTC/CIRCUIT DIAGNOSIS >

[ITS CONTROL UNIT]

## U130B REAR CAMERA COMM ERROR

DTC Logic

### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U130B	REAR CAMERA COMM ERROR	ITS control unit receives the incorrect communication 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 <u>DAS-58</u>, "<u>Diagnosis Procedure</u>".

NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000009464698

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

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

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

### Is the inspection result normal?

YES >> Replace the ITS control unit. Refer to <u>DAS-68</u>. "Removal and Installation".

NO >> Replace rear view camera. Refer to <u>DAS-69</u>, "Removal and Installation".

[ITS CONTROL UNIT]

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INFOID:0000000009464700

## U1310 PUMP UNIT CIRCUIT

**DTC Logic** INFOID:0000000009464699

#### 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	Rear view camera washer control unit     Harness     ITS control unit

#### DTC CONFIRMATION PROCEDURE

# 1. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON.
- Perform "All DTC Reading" with CONSULT. 2.
- Check if the "U1310" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".

### Is "U1310" detected as the current malfunction?

>> Refer to DAS-59, "Diagnosis Procedure". YES

NO >> Inspection End.

## Diagnosis Procedure

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

# $1.\mathsf{check}$ rear view camera air pump motor power supply circuit

- Disconnect the rear view camera washer control unit connector.
- 2. Turn the ignition switch ON.
- Check voltage between rear view camera washer control unit connector and ground.

Terminal				
(+) Rear view camera washer control unit				Voltage (Approx.)
		(-)	Condition	
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

Turn the ignition switch OFF.

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

Rear view camera	washer control unit		Continuity
Connector	nnector Terminal		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

Disconnect the ITS control unit connector.

**DAS-59** Revision: November 2013 2014 Altima NAM DAS

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### **U1310 PUMP UNIT CIRCUIT**

### < DTC/CIRCUIT DIAGNOSIS >

[ITS CONTROL UNIT]

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	Terminal	Connector Terminal		
M58	2	B16	7	Yes
IVIOO	3	D10	8	res

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

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

### 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
ь10	2	БП	2	165

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	Giodila	No	
D10	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.

# 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 >

[ITS CONTROL UNIT]

	Terminal			
(-	(+)			Voltage
	Rear view camera washer control unit		Condition	Voltage (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 <u>DAS-68</u>, "Removal and Installation".

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### **POWER SUPPLY AND GROUND CIRCUIT**

< DTC/CIRCUIT DIAGNOSIS >

[ITS CONTROL UNIT]

## POWER SUPPLY AND GROUND CIRCUIT

# Diagnosis Procedure

INFOID:0000000009464701

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		switch		
	20		OFF	Battery voltage	
M58			ON	Battery voltage	
	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.

## WARNING SYSTEMS SWITCH CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[ITS CONTROL UNIT]

## WARNING SYSTEMS SWITCH CIRCUIT

# Component Function Check

### INFOID:0000000009464702

# 1. CHECK WARNING SYSTEMS SWITCH INPUT SIGNAL

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- Turn the ignition switch ON.
- Select the DATA MONITOR item "ITS SW 1" of "AVM" with CONSULT. 2.
- With operating the warning systems switch, check the monitor status.

Monitor item	Condition	Monitor status
ITS SW 1	Warning systems switch is pressed	On
110 000 1	Warning systems switch is not pressed	OFF

#### Is the inspection result normal?

YES >> Warning systems switch circuit is normal.

>> Refer to DAS-63, "Diagnosis Procedure". NO

## Diagnosis Procedure

INFOID:0000000009464703

Regarding Wiring Diagram information, refer to <a href="DAS-22">DAS-22</a>, "Wiring Diagram".

# 1. CHECK WARNING SYSTEMS SWITCH SIGNAL INPUT

- Turn the ignition switch ON.
- Check voltage between ITS control unit harness connector and ground.

	Terminals	Condition		
(+)		(-)	Condition	Voltage
ITS control unit		Warning	(Approx.)	
Connector	Terminal	Ground	systems switch	
M58			Pressed	0 V
IVI30 32		Released	12 V	

### Is the inspection result normal?

>> Replace the ITS control unit. Refer to DAS-68, "Removal and Installation".

NO >> GO TO 2.

# 2.CHECK WARNING SYSTEMS SWITCH

- Turn ignition switch OFF.
- Remove warning systems switch.
- Check warning systems switch. Refer to DAS-64, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace the warning systems switch. Refer to DAS-142, "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	Connector Terminal		Continuity
M62	8		Yes

#### Is the inspection result normal?

YES >> GO TO 4.

> **DAS-63** Revision: November 2013 2014 Altima NAM

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### **WARNING SYSTEMS SWITCH CIRCUIT**

### < DTC/CIRCUIT DIAGNOSIS >

[ITS CONTROL UNIT]

NO >> Repair harness or connector.

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

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

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	ITS control unit		Continuity
Connector	Terminal	Ground	Continuity
M58	32		No

### Is the inspection result normal?

YES >> Replace the ITS control unit. Refer to DAS-68, "Removal and Installation".

NO >> Repair the harnesses or connectors.

# Component Inspection

INFOID:0000000009464704

# 1. CHECK WARNING SYSTEMS SWITCH

Check continuity of warning systems switch.

Terr	Terminal Condition		Continuity
6	g	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-142, "Removal and Installation".

### WARNING SYSTEMS ON INDICATOR CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[ITS CONTROL UNIT]

# WARNING SYSTEMS ON INDICATOR CIRCUIT

# Component Function Check

INFOID:0000000009464705

# 1. CHECK WARNING SYSTEMS ON INDICATOR

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- 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-65</u>, "<u>Diagnosis Procedure</u>".

## Diagnosis Procedure

INFOID:0000000009464706

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

# 1. CHECK WARNING ON INDICATOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 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

- 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.

# 3.CHECK WARNING SYSTEMS ON INDICATOR SIGNAL CIRCUIT FOR SHORT

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

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### WARNING SYSTEMS ON INDICATOR CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[ITS CONTROL UNIT]

ITS cor	ITS control unit		Continuity
Connector	Terminal	Ground	Continuity
M58	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-66, "Component Inspection".

### Is the inspection result normal?

YES >> Replace the ITS control unit. Refer to <a href="DAS-68">DAS-68</a>, "Removal and Installation".

NO >> Replace warning systems switch. <u>DAS-142</u>, "Removal and Installation".

## Component Inspection

INFOID:0000000009464707

# 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	
	3	When the battery voltage is not applied	Off

#### Is the inspection result normal?

YES >> Inspection End.

NO >> Replace the warning systems switch. Refer to <a href="DAS-142">DAS-142</a>, "Removal and Installation".

## **WARNING BUZZER CIRCUIT**

## < DTC/CIRCUIT DIAGNOSIS >

[ITS CONTROL UNIT]

< DTC/CIRCUIT DIAGNOSIS >	[110 00M11K0E 0M11]
WARNING BUZZER CIRCUIT	
Component Function Check	INFOID:0000000009464708
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 DAS-67, "Diagnosis Procedure".	
Diagnosis Procedure	INFOID:000000009464709
1. CHECK WARNING BUZZER OPERATION	
<ul> <li><u>Does warning buzzer sound?</u></li> <li>YES &gt;&gt; Replace the ITS control unit. Refer to <u>DAS-68. "Removal and Installation</u> NO &gt;&gt; Replace the combination meter (buzzer).</li> </ul>	<u>n"</u> .

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INFOID:0000000009464711

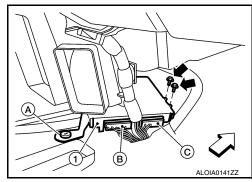
# REMOVAL AND INSTALLATION

# ITS CONTROL UNIT

### Removal and Installation

### **REMOVAL**

- 1. Disconnect the battery negative terminal. Refer to PG-73, "Removal and Installation (Battery)".
- 2. Remove the center console assembly. Refer to IP-18, "Removal and Installation".
- 3. Disconnect the harness connectors (B,C) from the ITS control unit (1).
  - <: Front
- 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.

[ITS CONTROL UNIT]

INFOID:0000000009978529

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# **REAR VIEW CAMERA**

Exploded View

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- 1. Rear view camera washer control unit
- 2. Rear view camera air pump motor
- 3. Rear view camera

INFOID:0000000009978528

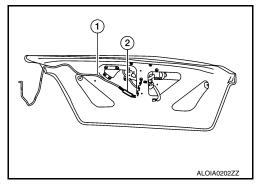
4. Trunk lid

### Removal and Installation

**REMOVAL** 

1. Remove rear view camera air pump motor. Refer to <a href="DAS-71">DAS-71</a>, "Removal and Installation".

2. Disconnect the rear washer tube (1) from rear view camera (2).



Disconnect the harness connector from the rear view camera and remove.

### **INSTALLATION**

Installation is in the reverse order of removal.

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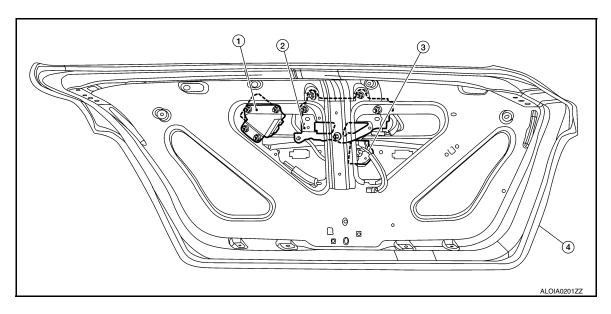
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# REAR VIEW CAMERA WASHER CONTROL UNIT

Exploded View



- 1. Rear view camera washer control unit
- 2. Rear view camera air pump motor
- 3. Rear view camera

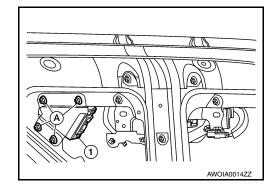
4. Trunk lid

### Removal and Installation

INFOID:0000000009464712

### **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.

[ITS CONTROL UNIT]

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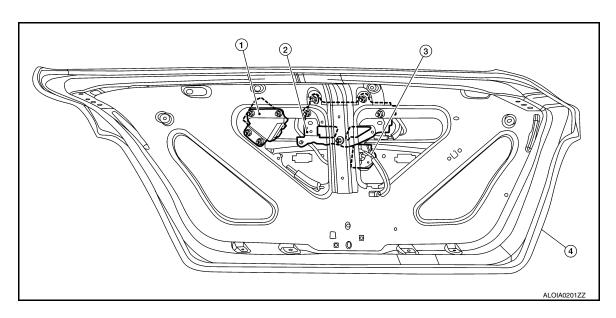
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INFOID:0000000009464714

## REAR VIEW CAMERA AIR PUMP MOTOR

Exploded View



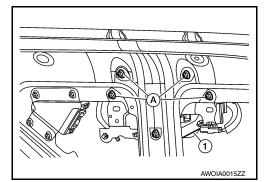
- 1. Rear view camera washer control unit
- 2. Rear view camera air pump motor
- 3. Rear view camera

4. Trunk lid

### Removal and Installation

**REMOVAL** 

- 1. Remove the trunk lid finisher. Refer to INT-33, "TRUNK LID FINISHER: Removal and Installation".
- 2. Disconnect the air tubes 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 (1).



### **INSTALLATION**

Installation is in the reverse order of removal.

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< PRECAUTION > [LDW]

# **PRECAUTION**

### **PRECAUTIONS**

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

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

#### **WARNING:**

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

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

#### **WARNING:**

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

Precaution for 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.

INFOID:0000000009464717

- 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.

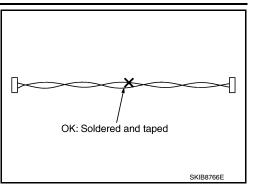
Revision: November 2013 DAS-72 2014 Altima NAM

## **PRECAUTIONS**

[LDW] < PRECAUTION >

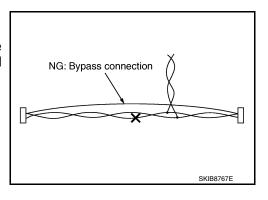
• Solder the repaired area and wrap tape around the soldered area. NOTE:

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

INFOID:0000000009464718

**WARNING:** 

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

- Do not use the LDW system when driving with free rollers or a chassis dynamometer.
- Do not disassemble or alter the rear view camera.
- Do not use the rear view camera when removed from the vehicle.
- Do not disable the LDW system without the consent of the customer.

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# **PREPARATION**

[LDW] < PREPARATION >

# **PREPARATION**

# **PREPARATION**

Special Service Tool

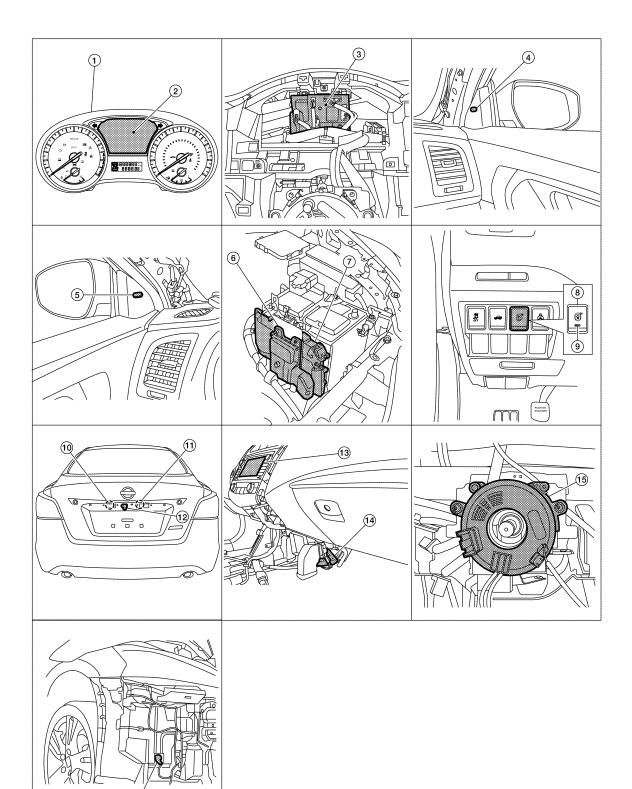
Special Service 1001			INFOID:0000000009464719
The actual shapes of the tools may	differ from those illustrated here.		
Tool number (TechMate No.) Tool name		Description	
_		Removing trim components	
(J-46534) Trim Tool Set			
	AWJIA0483ZZ		

INFOID:0000000009464720

# SYSTEM DESCRIPTION

# **COMPONENT PARTS**

**Component Parts Location** 



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## < SYSTEM DESCRIPTION >

- 1. Combination meter
- Blind spot warning indicator RH
- 7. **ECM**
- 10. Rear view camera washer control unit
- 13. AV control unit (center display) (with navi- 14. ITS control unit gation system and bose audio system) Audio unit (center display) (with display audio system and bose audio system)
- 16. Washer fluid level switch (view with front fascia removed)

- 2. Vehicle information display
- 5. Blind spot warning indicator LH
- 8. Warning systems switch
- 11. Rear view camera air pump motor
- (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 Description

INFOID:0000000009464721

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 signal 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
TCM	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 (with navigation system and bose audio system)	Receives the various systems and camera signals via CAN communication and routes them to the center display
Audio unit (with display audio system and bose audio system)	Receives the various systems and camera signals 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 unit

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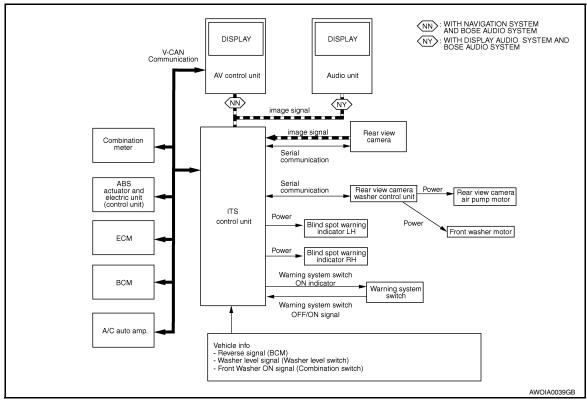
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# **SYSTEM**

# **System Description**

INFOID:0000000009464722

## SYSTEM DIAGRAM



#### ITS CONTROL UNIT INPUT/OUTPUT SIGNAL ITEM

#### Input Signal Item

Transmit unit	Signal name		Description
ВСМ	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 systems 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- camera nication		Vehicle speed signal	Transmits a vehicle speed calculated by the ITS control unit
		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

Revision: November 2013 DAS-77 2014 Altima NAM

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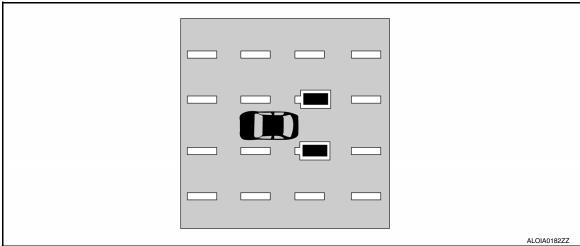
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#### **FUNCTION DESCRIPTION**

- 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 <a href="DAS-82">DAS-82</a>, "Precautions for Lane Departure Warning"

Bulb Check Action and Fail-safe Indication

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Vehicle condition/ Driver's operation	Warning sys- tems ON indi- cator	Indication on the combination meter
lgnition switch OFF ⇒ ON (Bulb check)	Approx. 5 sec. ON	ON (white)  ALOIA0183ZZ  ON: Operational  Blinking: LDW detected
When DTC is detected (Except "U1308")	ON	LDW OFF (orange)
Camera aiming is not completed ("U1308"is detected) NOTE: This is detected while driving the vehicle and the indication remains ON until the ignition switch is turned OFF	ON	Malfunction See Owner's Manual  ALOIA0159GB
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)

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)

#### 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"

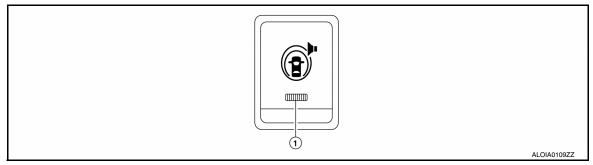
When the above condition no longer exists, the BSW and /or LDW system will resume automatically.

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# **OPERATION**

# Switch Name and Function



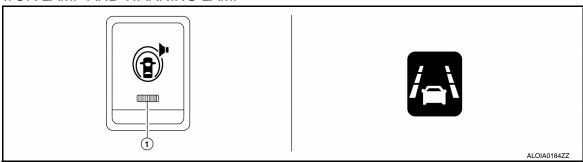


No.	Switch name	Description
1	Warning systems switch	Turns LDW system ON/OFF (When the setting of LDW system on the navigation system screen is ON)

# Menu Displayed by Pressing Each Switch

INFOID:0000000009464726

## INDICATOR LAMP AND WARNING LAMP



No.	Display item	Description
1	Warning systems ON indicator	Indicates that the LDW and/or BSW system is ON
2	Lane departure warning lamp	<ul> <li>Blinks when LDW system is activated</li> <li>Turns ON when LDW system has a malfunction</li> <li>Blinks when DTC is detected or system is temporarily disabled</li> <li>Blinks when rear view camera blockage is detected</li> </ul>

## **DISPLAY AND WARNING**

Vehicle condition/ Driver's operation		Action	Warning sys- tems ON indi- cator	Indication on the combination meter	Buzzer
Less than Approx. 60 km/h (40 MPH)	Close to lane marker	No action	ON	White	_

# **OPERATION**

# < SYSTEM DESCRIPTION >

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Vehicle 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  • Buzzer sounds  • Warning lamp blinks (orange)	ON	OFF (orange) Blink	Short continuous beeps
	Close to lane marker     Turn signal ON (Deviate side)	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-77</u>, "System <u>Description"</u>.

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# HANDLING PRECAUTION

# Precautions for Lane Departure Warning

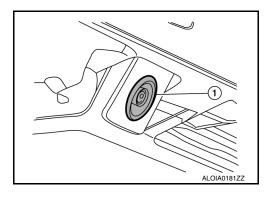
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#### REAR VIEW CAMERA HANDLING

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.

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

< SYSTEM DESCRIPTION >

[LDW]

# DIAGNOSIS SYSTEM (ITS CONTROL UNIT)

**CONSULT Function (AVM)** 

#### INFOID:0000000009951637

#### **CAUTION:**

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

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#### APPLICATION ITEMS

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

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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

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### SELF DIAGNOSTIC RESULT

Refer to DAS-89, "DTC Index".

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#### DATA MONITOR

[OK/NG]

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 actuator 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	Indicates the state of the communication signal from numn control unit

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Indicates the state of the communication signal from pump control unit

Monitored item [Unit]	Description
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
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
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

#### **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			
LED LH INDICATOR	ON	Flashes the left side LED light for ITS system			
LLD LITINDICATOR	OFF	Trasties the left side LLD light for 110 system			
LED RH INDICATOR	ON	Flashes the right side LED light for ITS system			
LLD KITINDICATOR	OFF				
AIR ACTIVE	ON	Activates the air pump to clean the lens of rear camera			
AIR ACTIVE	OFF	Activates the all pump to clean the lens of real camera			
AIR & WASH ACTIVE	ON	Activates the air pump and washer to clean the lens of rear camera			
AIR & WASH ACTIVE	OFF	- Activates the all pump and washer to clean the lens of real camera			

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

## < SYSTEM DESCRIPTION >

[LDW]

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.

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# **ECU DIAGNOSIS INFORMATION**

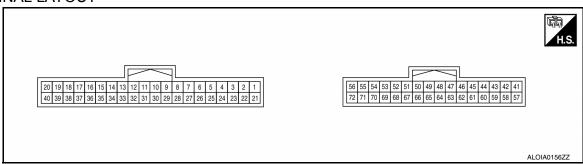
# ITS CONTROL UNIT

Reference Value

## VALUES ON THE DIAGNOSIS TOOL

Monitor item		Condition	Value/Status
ST ANGLE SENSOR	Ignition switch ON	Steering angle signal is received	On
SIGNAL	Igrittori switch Oiv	Steering angle signal is not received	Off
REVERSE SIGNAL	Ignition switch ON	Shift selector in R (reverse)	On
REVERSE SIGNAL	Igrillion Switch ON	Shift selector is not in R (reverse)	Off
VEHICLE SPEED	While driving	Vehicle speed signal is received	On
SIGNAL	While driving	Vehicle speed signal is not received	Off
CAMERA SWITCH	Ignition quitab ON	Camera switch is pressed	On
SIGNAL	Ignition switch ON	Camera switch is not pressed	Off
CAMERA OFF SIG-	Invition switch ON	Purpose switch is pressed	On
NAL	Ignition switch ON	Purpose switch is not pressed	Off
ST ANGLE SENSOR	Invition switch ON	Steering angle sensor type is displayed	Absolute
TYPE	Ignition switch ON	Steering angle sensor type is not received	Not
STEERING GEAR	Ignition switch CAI	Pattern 1 type of steering gear ratio displayed	Pattern 1
RATIO TYPE	Ignition switch ON	Pattern 2 type of steering gear ratio displayed	Pattern 2
STEERING POSI-	Invalidade accidente CAL	It recognizes steering position is left	LHD
TION	Ignition switch ON	It recognizes steering position is right	RHD
R-CAMERA COMM		Rear camera serial status is OK	
STATUS	Ignition switch ON	Rear camera serial status is not OK	NG
R-CAMERA COMM		Rear camera serial communication signal is received	OK
LINE	Ignition switch ON	Rear camera serial communication signal is not received	NG
	Leading a Make ON	Illumination is ON	On
ILL	Ignition switch ON	Illumination is OFF	Off
TO 014/4		ITS switch is pressed	On
ITS SW 1	Ignition switch ON	ITS switch is not pressed	Off
ITO OWY 4 INID		Indicator of ITS switch 1 is lighting	On
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	N
		Turn signal right is received	Right
REAR CAMERA IM-		Camera image signal is received	On
AGE SIGNAL	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
		Wash switch signal is pressed	On
WASH SW	Ignition switch ON	Wash switch signal is not pressed	Off
PUMP COMM STA-		Pump communication signal is received	On
TUS	Ignition switch ON	Pump communication signal is not received	Off

# TERMINAL LAYOUT



## PHYSICAL VALUES

Terminal No. (Wire color) Description				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	washer level switch	input	switch ON	When washer fluid is not low (switch open)	12 V
2 (G)	Ground	Washer signal pump to camera	Input	Ignition sw	itch ON	5 V
3 (W)	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 (P)	Ground	Serial ground	Output	_	_	0 V
27 (L)	Ground	CAN -H	_	_	_	_
28	Ground	Reverse	Input	Ignition	Shift selector in R (reverse)	12 V
(R)	Ground	Reverse	mput	switch ON	Shift selector not in R (reverse)	0 V
32	Ground	Cancel SW output	Input	Ignition	Cancel switch pressed	0 V
(P)	Ground	Cancel Svv Output	Input	switch ON	Cancel switch not pressed	12 V
33	Ground	LED input	Outout	Ignition	Warning system is ON	12 V
(BG)	Ground	LED input	Output	switch ON	Warning system is OFF	0 V
37	Ground	SOW LED cianal L	Outout	While	LDW/BSW detected	12 V
(W)	Ground	SOW LED signal L	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

Revision: November 2013 DAS-87 2014 Altima NAM

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	erminal No. Wire color)  Description  Condition		Condition	Value	
+	_	Signal name	Input/ Output	Condition	(Approx.)
52 (W)	Ground	RR CAM ON	Output	Ignition switch ON	6 V
66 (B)	Ground	RR CAM COMP +	Input	Ignition switch ON	(V) 1 0 -1 -40 μs ALOIA01792Z
68 (G)	Ground	RR CAM CONT	Input	Ignition switch ON	5 V
69 (B)	Ground	RR CAM COMP +	Input	Ignition switch ON	(V) 1 0 -1 -40 μs ALOIA0179ZZ

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
Moving Object Detection (MOD)	Low-pitched tone	Warning lamp MOD icon (on camera screen)	Cancel

# **DTC Inspection Priority Chart**

INFOID:0000000009951643

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	C1A03: VHCL SPEED SE CIRC C1A04: VDC FAIL U0122: VDC P-RUN DIAG U0416: VDC CHECKSUM DIAG

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DTC Index

#### 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  $0 \to 1 \to 2 \cdots 38 \to 39$  after returning to the normal condition whenever the ignition switch OFF  $\to$  ON. It returns to 0 when a malfunction is detected again in the process.
- If it is over 39, it is fixed to 39 until the self-diagnosis results are erased.
   Other than CAN communication system (Other than U1000, U1010)
- 1 49: It increases like 0 → 1 → 2 ··· 38 → 49 after returning to the normal condition whenever the ignition switch OFF → ON. It returns to 0 when a malfunction is detected again in the process.
- If it is over 49, it is fixed to 49 until the self-diagnosis results are erased.

Systems for fail-safe

- · A: Lane Departure Warning (LDW)
- · B: Blind Spot Warning (BSW)
- · C: Moving Object Detection (MOD)

DTC		1	Narning lam	пр	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-111
C1A04	VDC FAIL	ON	ON	ON	A, B, C	DAS-112
C1A39	STRG SEN CIR	ON	ON	ON	A, B, C	DAS-113
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-114
U0416	VDC CHECKSUM DIAG	ON	ON	ON	A, B, C	DAS-115
U0428	STRG SEN CAN CIR 2	ON	ON	ON	A, B, C	DAS-116
U1000 <sup>NOTE</sup>	CAN COMM CIRCUIT	ON	ON	ON	A, B, C	DAS-117
U1010	CONTROL UNIT (CAN)	ON	ON	ON	A, B, C	DAS-118
U111A	REAR CAMERA IMAGE SIGNAL	ON	ON	ON	A, B, C	DAS-119
U1232	ST ANGLE SEN CALIB	ON	ON	ON	A, B, C	DAS-121
U1305	CAMERA IMAGE CALIB	ON	ON	ON	A, B, C	DAS-122
U1308	CAMERA CONFIG	ON	ON	ON	A, B, C	DAS-123
U1309	PUMP UNIT CURRENT	ON	ON	ON	A, B, C	DAS-124
U130B	REAR CAMERA COMM ERROR	ON	ON	ON	A, B, C	DAS-127
U1310	PUMP UNIT CIRCUIT	ON	ON	ON	A, B, C	DAS-128

#### NOTE:

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

Revision: November 2013 DAS-89 2014 Altima NAM

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# ITS CONTROL UNIT

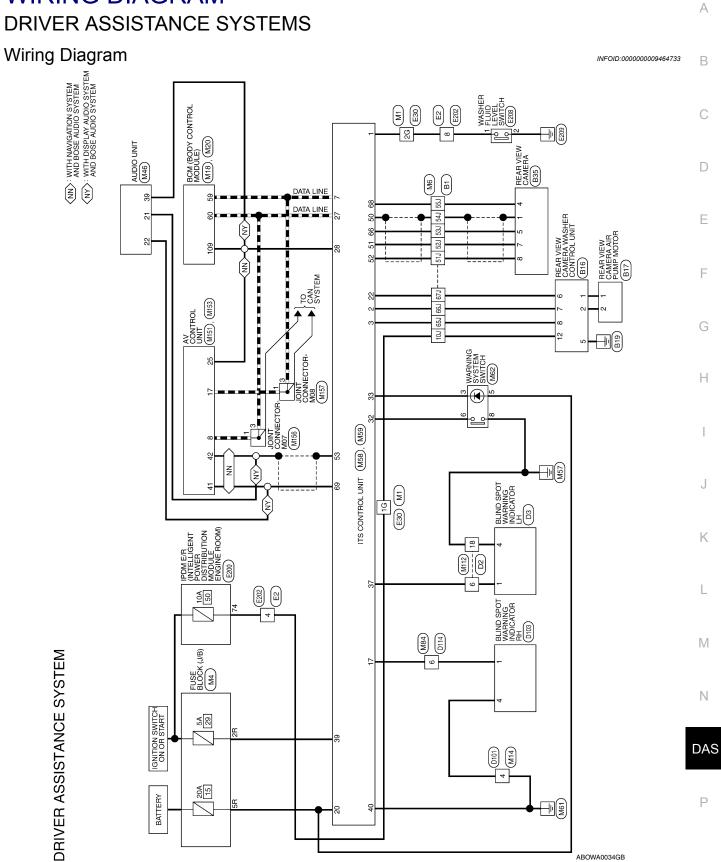


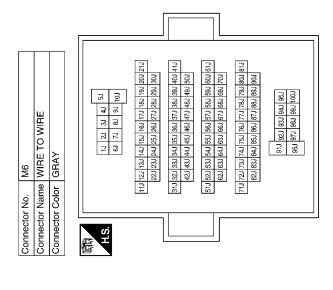
[LDW]

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.

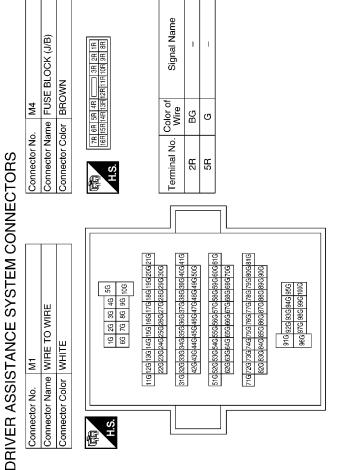
[LDW] < WIRING DIAGRAM >

# WIRING DIAGRAM





Signal Name	-	-	-	-	-	=	-	=	-
Color of Wire	LG	×	Œ	В	SHIELD	თ	×	g	Ь
Terminal No.	101	51J	52J	53J	54J	55J	65J	66J	F29



Signal Name	ı	1
Color of Wire	ГG	BR
Terminal No.	16	2G

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Connector No. M20	Connector Name BCM (BODY CONTROL MODULE)	Connector Color BLACK	116 115 114 113 112 11  110 109 108 107 106 105    128 127 126 125 124 123 122 121 120 119 118 117	Terminal No. Color of Wire	G REVERSE SIGNAL
Connecto	Connecto	Connecto	(斯) H.S. H.S.		109
18	Connector Name BCM (BODY CONTROL MODULE)	LACK	25 S2 51 50 49 48 47 46 45 44 43 77 77 77 77 77 70 60 60 60 60 60 60 60 60 60 60 60 60 60	Signal Name	CAN-L
Connector No. M18	Connector Name B	Connector Color BLACK	H.S. [60] 58 57 56 55 54 53 52 51 100 27 12 12 12 12 12 12 12 12 12 12 12 12 12	minal N	59 P
Conr	O WIRE			Signal Name Term	ı
Sonnector No. M14	Connector Name WIRE TO WIRE		1 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Terminal No. Color of Wire	GR

			35 51 52				
	Connector Name AUDIO SYSTEM AND BOSE AUDIO SYSTEM)	TE TE	26 27 28 29 30 31 32 33 34 42 45 46 46 46 46 46 46 9 50	Signal Name	COMPOSITE -	COMPOSITE +	REVERSE
. M46	me AUE AUE	lor WHITE	22 23 24 25 38 39 40 41	Color of Wire	SHIELD	В	G
Connector No.	Connector Na	Connector Color	H.S.	Terminal No.	21	22	68

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Signal Name	1	ı	1	CAN-H	REV	ı	ı	ı	CANCEL SW OUTPUT	LED INPUT	ı	1	ı	SOW LED SIGNAL L	ı	IGN	GND
Color of Wire	1	1	1	_	ш	ı	1	ı	۵	BG	ı	ı	_	Μ	_	BG	В
Terminal No.	24	25	56	27	28	29	30	31	32	33	34	35	36	37	38	39	40

Signal Name	I	I	_	ı	-	-	I	RR CAM COMP +	-	RR CAM CONT	COMP OUT +	ı	-	-
Color of Wire	1	ı	ı	ı	ı	-	ı	В	-	ŋ	В	ı	ı	1
Terminal No.	29	09	61	62	63	64	65	99	29	89	69	70	71	72

Signal Name	CAN-L	1	1	ı	ı	ı	1	I	1	ı	SOW LED SIGNAL R	1	1	B+	1	SERIAL GND	ı
Color of Wire	۵	ı	ı	ı	ı	ı	ı	ı	ı	ı	ŋ	ı	ı	Э	ı	۵	ı
Terminal No.	7	8	6	10	11	12	13	14	15	16	17	18	19	20	21	22	23

	_												
Signal Name	ı	ı	ı	I	I	RR CAM GND	RR CAM ON	I	I	I	-	I	I
Color of Wire	1	1	ı	ı	SHIELD	ш	≯	SHIELD	-	ı	_	ı	ı
erminal No.	46	47	48	49	50	51	52	53	54	55	99	22	58

				22 21							
3	ITS CONTROL UNIT	IIE		12 11 10 9 8 7 6 5 4 3 32 31 30 29 28 27 26 25 24 23	Signal Name	WASH LVL SW	FROM PUMP TO CAMERA C/U	FROM CAMERA C/U TO PUMP	-	ı	1
. M58	_	lor WHITE		15 14 13 35 34 33	Color of Wire	BR	g	>	ı	ı	1
Connector No.	Connector Name	Connector Color	H.S.	20 19 18 17 16 40 39 38 37 36	Terminal No.	-	2	က	4	5	9

Connector No.		M59	െ											
Connector Name ITS CONTROL UNIT	r Name	E	0	Ó	巨	l2	_	15	l⊑				Ι	
Connector Color WHITE	r Color	⋠	≒	ш										
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2	72 71 70 69	69	68 67 66 65 64 63	22	98	99	94	83	62	91	62 61 60 59 58	29		27
_														

	4	2							
	43	59							
	44 43 42	99 28							
	45	61		£					
	46	62		a					
Τ	48 47	63		=	1	1	-1	1	-1
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	49	65		Signal Name					
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	26	72		ġ					
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Connector Name WIRE TO WIRE  Connector Color WHITE	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	Signal Name W - B -	No. M156  Name JOINT CONNECTOR-M07  Color WHITE  [	Color of Signal Name L
Connector Name Connector Color	H.S.	Terminal No.	Connector No. Connector Color H.S.	Terminal No.
E TO WIRE	6 7 8 9 10 11 12 18 19 20 21 22 23 24	Signal Name	AV CONTROL UNIT (WITH NAVIGATION SYSTEM) BOSE AUDIO SYSTEM) WHITE    Control of the control of t	Signal Name REVERSE CAMERA + CAMERA - (SHIELD)
Connector Color WHITE	H.S. (18 14 15 16 17)	Terminal No. Color of 6 G	Connector No. M153 AV COI Connector Name BOSE, Connector Color WHITE	Terminal No. Color of Wire 25 G H 41 B H 42 SHIELD
EM SWITCH		Name	JNIT (WITH YSTEM) YSTEM)	Name N-H V-L
IING SYST	4 8 8 7 8 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9	Color of Signal Nurse BG - G - B B - B - B B - B B - B B - B B B - B	M151  AV CONTROL V NAVIGATION S BOSE AUDIO S WHITE	Color of Signal Nar L CAN-H P CAN-L
Connector Color GRAY	所 H.S.	Terminal No.	Connector No. Connector Name Connector Color	Terminal No. Co

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					Connector No. E200	Connector Name POWER DISTRIBUTION	_	Connector Color WHITE	(所) (74 (一) 75 76 (H) (H)S. (	Terminal No. Color of Signal Name Wire	74 BG WASH MTR (WITH RAR VIEW CAMERA)		
E2 WIRE TO \	4 5 6 7 8	Color of Signal Name Wire	BG – (WITH REAR VIEW CAMERA)	ı	Color of Signal Name Wire	BG – (WITH REAR		I .					
Connector No. Connector Color	H.S.	Terminal No.	4	ω	Terminal No.		2 6	D N					
nector No. M157 Inector Name JOINT COI	斯 H.S.	Terminal No. Color of Signal Name Wire	_ a a	-	Connector No. E30	Connector Name WIRE TO WIRE			H.S. 106 96 86 76 66	21020019061801706186156146136126110 300259029067028662582420629022	410400 390 390 370 380 350 340 330 320 310  500 490 480 470 480 450 46 450 420	81 G 80 G 79 G 79 G 77 G 75 G 74 G 73 G 77 G 77 G 79 G 79	936 936 936 936 936 936 936 936 936 936 936 936

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				B16		_	WHITE		2	11 10 9 8		Color of Signal Name Wire	V PUMP MOTOR +	ROMP MOTOR		iii.	W FROM CAMERA C/U TO PUMP	W IGN	
				Connector No.	Connector Name		Connector Color			H.S.		Terminal No. Wo.	-				8	12	
E208 WASHER FLUID LEVEL SWITCH BLACK		Signal Name	1 1		Signal Name	ı	1	1	1	1	ı	1	1	ı					
Connector No. E208 Connector Name WASHE SWITCH Connector Color BLACK	_	Terminal No. Wire			<u>8</u>					K	55J G		+	67J P					
Connector No. E202  Connector Name WIRE TO WIRE  Connector Color WHITE	H.S. 8 7 6 5 4	al No. Color of Signal Name Wire - (WITH	4 BG REAR VIEW CAMERA) 8 R -	Connector No. B1	WIRE TO WIRE	Connector Color GRAY			Su	10, 90, 81, 72		21. 200. [193] [183] [173] [184] [185] [184] [183] [123] [113] [18		41.1 40.1 38.1 38.1 37.1 38.1 35.1 34.1 33.1 32.1 31.1 50.1 40.1 38.1 48.1 48.1 48.1 48.1 48.1	61.1 600 580 581 573 560 550 541 530 522 513		81.1   80.1   73.2   73.4   73.2   73.4   73.2   73.4   73.2   73.4   73.2   73.4   73.2	55, [34, [32, [32, [32, [32, [32, [32, [32, [32	1000 PAS   1000   1000   1000   1000

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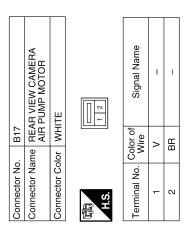
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Connector No.   D2	Connector Name WIRE TO WIRE	Connector Color WHITE	12   11   10   9   8   7   6   5   4   3   2   1	ninal No. Color of Signal Name Wire	П В В	18 B -
Connector	Connector	Connector	H.S.	Terminal No.	9	18

	E TO WIRE	里	12 11 10 9 8 7 6 5 4 8 17 16 16 17 16 16 17 16 16 17 16 16 17 16 16 17 16 16 17 16 16 17 16 16 17 16 16 17 16 16 17 16 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 17 16 17 17 16 17 17 17 17 17 17 17 17 17 17 17 17 17	Signa		
DS	e WIF	- WH	23 22 12 23 22 12 23 23 23 23 23 23 23 23 23 23 23 23 23	Color of Wire	Ъ	а
Connector No.	Connector Name WIRE TO WIRE	Connector Color WHITE	H.S. (24 28)	Terminal No.	9	18
	_	_				_

	REAR VIEW CAMERA	11	Q   Q   C   T   T   T   T   T   T   T   T   T	Signal Name	1	1	1	ı	I
. B35		lor WHITE	4 8	Color of Wire	SHIELD	ŋ	ш	В	>
Connector No.	Connector Name	Connector Color	H.S.	Terminal No.	-	4	5	7	8



Connector No.	D103	33
Connector Name	me BLI	BLIND SPOT WARNING INDICATOR RH
Connector Color WHITE	lor WH	ITE
南 H.S.	4	- 2
Terminal No.	Color of Wire	Signal Name
1	Н	-
4	В	ı

ctor No. D101	Connector Name WIRE TO WIRE	Connector Color WHITE	3 7 6 5 4	Terminal No. Color of Signal Name Wire	4 B –
Connector No.	Connector I	Connector (	币 H.S.	Terminal No	4

Connector No.	. D3	
Connector Na	me BLIN	Connector Name BLIND SPOT WARNING INDICATOR LH
Connector Color WHITE	lor WHI	ТЕ
原 H.S.	4	2 2 1
Terminal No.	Color of Wire	Signal Name
1	Ь	I
4	В	1

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# **DRIVER ASSISTANCE SYSTEMS**

[LDW] < WIRING DIAGRAM >

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Connector No. D114  Connector Name WIRE TO WIRE  Connector Color WHITE  TE 11 10 9 8 7 6 5 4  H.S. TE 2 2 2 2 2 2 1 20 19 18 17 16	30,010	22 22 21 20 19 7	onnector Color WHITE	onnector Name WIRE TO WIRE	
		14	1()	10	10

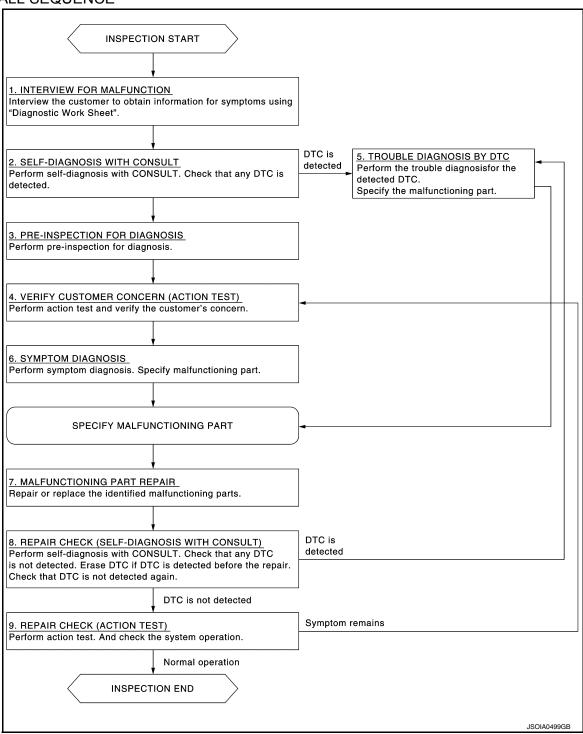
< BASIC INSPECTION > [LDW]

# **BASIC INSPECTION**

# DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

### **OVERALL SEQUENCE**



#### **DETAILED FLOW**

# 1.INTERVIEW FOR MALFUNCTION

Interview the customer to obtain information about symptoms using "Diagnostic Work Sheet". (Refer to <u>DAS-101, "Diagnostic Work Sheet"</u>.)

## DIAGNOSIS AND REPAIR WORK FLOW

[LDW] < BASIC INSPECTION > Α >> GO TO 2. 2.self-diagnosis with consult Perform "All DTC Reading" with CONSULT. В 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 D Perform pre-inspection for diagnosis. Refer to DAS-103, "Inspection Procedure". >> GO TO 4. Е 4. ACTION TEST Perform LDW system action test to check the operation status. Refer to DAS-104, "Description". >> GO TO 6. 5.TROUBLE DIAGNOSIS BY DTC Perform trouble diagnosis for the detected DTC. Specify a malfunctioning part. Refer to DAS-89, "DTC Index" (ITS CONTROL UNIT). Н >> GO TO 7. **6**.SYMPTOM DIAGNOSIS Perform symptom diagnosis. Specify malfunctioning part. Refer to DAS-137, "Symptom Table". >> GO TO 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? M YFS >> GO TO 5. NO >> GO TO 9. Ν 9.REPAIR CHECK (ACTION TEST) Perform LDW system action test. Also check the system operation. Does it operate normally? DAS YES >> Inspection End. >> GO TO 4. NO Diagnostic Work Sheet INFOID:0000000009464735

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-101** Revision: November 2013 2014 Altima NAM

## **DIAGNOSIS AND REPAIR WORK FLOW**

< BASIC INSPECTION > [LDW]

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 Ily ☐ Othe	s OFF Blinks rs (	
Indicator/Warning lamps	☐ Warning systems ON indicator	☐ Stays ON	☐ Stays ☐ Othe		
	Other lamps	☐ Stays ON ☐ Turned ON occasiona	☐ Stays		
	☐ When using LDW	•			
Functions	All functions do not opera Warning function does not Yawing function does not	ot operate. ( \sum No soun	d □ No indic n is operated		
, and to the	☐ Functions	g the course in the turn sig function when driving on la when driving in a lane. in a different position from	ane markers.		
Conditions					
Oonanions					
	Continuously	☐ Intermit	tently		
Frequency Light conditions	☐ Continuously ☐ Not affected ☐ In the daytime ☐ Direct light	☐ Intermite ☐ At night ☐ Backlight		sunset (Strong light)	
Frequency	☐ Not affected ☐ In the daytime	☐ At night	☐ Sunrise/s		
Frequency Light conditions	□ Not affected □ In the daytime □ Direct light □ Not affected	☐ At night ☐ Backlight	Sunrise/s	s stopped	
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)	☐ Sunrise/s ☐ Others ( ☐ Vehicle is	s stopped	
Frequency Light conditions Driving conditions Weather conditions	Not affected In the daytime Direct light  Not affected Vehicle speed In the daytime Direct light	☐ At night ☐ Backlight  MPH ( km/h) ☐ Raining ☐ In town	Sunrise/s Others ( Vehicle in Snowing Others (	s stopped	

## PRE-INSPECTION FOR DIAGNOSIS

[LDW] < BASIC INSPECTION > PRE-INSPECTION FOR DIAGNOSIS Α Inspection Procedure INFOID:0000000009464736 1. CHECK CAMERA LENS В Is camera lens contaminated with foreign materials? C YES >> Clean camera lens. NO >> GO TO 2. 2.CHECK REAR VIEW CAMERA UNIT INSTALLATION CONDITION D Check rear view camera unit installation condition (installation position, properly fitted). Is it properly installed? YES Е >> GO TO 3. NO >> Install rear view camera unit properly, and perform rear view camera calibration. Refer to DAS-107, "Description". 3. CHECK VEHICLE HEIGHT F Check vehicle height. Refer to FSU-26, "Wheelarch Height (Unladen\*1)". Is vehicle height appropriate? YES >> Inspection End. NO >> Repair vehicle to appropriate height. Н K L M Ν

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#### **ACTION TEST**

< BASIC INSPECTION > [LDW]

## **ACTION TEST**

Description INFOID:000000009464737

- · Perform action test to verify the customer's concern.
- Perform action test and check the system operation after system diagnosis.

#### **WARNING:**

Be careful of traffic conditions and safety around the vehicle when performing road test. CAUTION:

- · Fully understand the following items well before the road test;
- Precautions: Refer to DAS-73, "Precaution for LDW System Service".
- System description for LDW: Refer to DAS-77, "System Description".
- System description for BSW: Refer to DAS-152, "System Description".
- System description for MOD: Refer to DAS-228, "System Description".
- Handling precaution: Refer to DAS-82, "Precautions for Lane Departure Warning".

# Inspection Procedure

INFOID:0000000009464738

#### **WARNING:**

Be careful of traffic conditions and safety around the vehicle when performing road test. CAUTION:

- Fully understand the following items well before the road test;
- Precautions: Refer to DAS-73, "Precaution for LDW System Service".
- System description for LDW: Refer to <a href="DAS-77">DAS-77</a>, "System Description".
- System description for BSW: Refer to DAS-152, "System Description".
- System description for MOD: Refer to DAS-228, "System Description".
- Handling precaution: Refer to DAS-232, "Precautions for Moving Objects Detection".

# CHECK LDW SYSTEM SETTING

- Start the engine.
- Check that the LDW system setting can be enabled/disabled on the vehicle information display.
- 3. Turn OFF the ignition switch and wait for 30 seconds or more.
- Check that the previous setting is saved when the engine starts again.

>> GO TO 2.

# 2. ACTION TEST FOR LDW

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

Vehicle of	condition/ Driver's operation	Action	Warning sys- tems ON indi- cator	Indication on the combination meter	Buzzer
Less than Approx. 60 km/h (40 MPH)	Close to lane marker	No action	ON	White ALOIA0191GB	_

# **ACTION TEST**

< BASIC INSPECTION > [LDW]

Vehicle of	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  Buzzer sounds  Warning lamp blinks	ON	White (Orange) White Blink ALOIA0190GB	Short continuous beeps
	Close to lane marker     Turn signal ON (Deviate side)	No action	ON	White ALOIA 0191GB	_

#### 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-77</u>, "System Description".

>> Inspection End.

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### ADDITIONAL SERVICE WHEN REPLACING REAR VIEW CAMERA

[LDW]

< BASIC INSPECTION >

# ADDITIONAL SERVICE WHEN REPLACING REAR VIEW CAMERA

Description INFOID.000000009464739

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

# 1.CAMERA AIMING ADJUSTMENT

Perform the camera aiming adjustment with CONSULT. Refer to DAS-107, "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-89</u>, "<u>DTC Index</u>".

NO >> GO TO 3.

# ${f 3}$ .LDW/BSW SYSTEM ACTION TEST

- 1. Perform the LDW/BSW system action test. Refer to <u>DAS-104, "Description"</u>.
- 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 → 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 → Check tube with blue marking or check valve

>> Inspection End.

#### **REAR VIEW CAMERA CALIBRATION**

< BASIC INSPECTION > [LDW]

# REAR VIEW CAMERA CALIBRATION

Description INFOID:000000009464741

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:0000000009464742

# 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-89, "DTC Index".

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

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# 2.PREPARATION BEFORE REAR VIEW CAMERA CALIBRATION

#### NOTE:

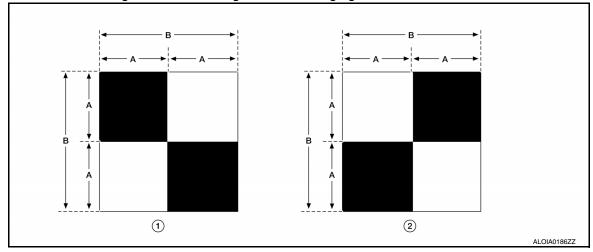
Select the "AVM" to diagnose the ITS control unit by CONSULT.

- Perform pre-inspection for diagnosis. Refer to <u>DAS-103, "Inspection Procedure"</u>.
- Adjust the tire pressure to the specified pressure value.
- 3. Maintain no-load in vehicle.
- 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.
- Clean the rear view camera.

#### >> GO TO 3.

# 3. PREPARATION OF CALIBRATION TARGET MARK

Prepare the calibration target mark according to the following figure:



**DAS-107** 

(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) DAS

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2014 Altima NAM

Revision: November 2013

>> Refer to DAS-108, "Work Procedure (Target Setting)".

# Work Procedure (Target Setting)

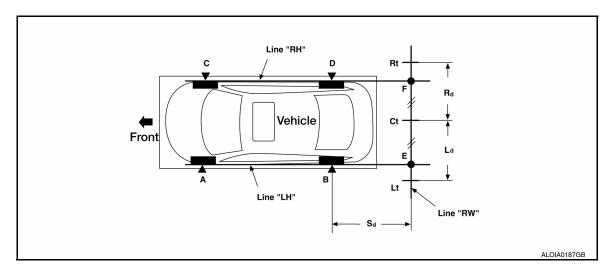
#### INFOID:0000000009464743

[LDW]

#### **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.

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:

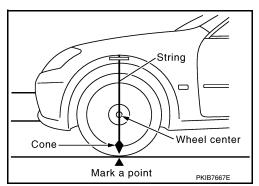
Approximately 1.8 m (5.91 ft) or more at both left and right sides from vehicle center.

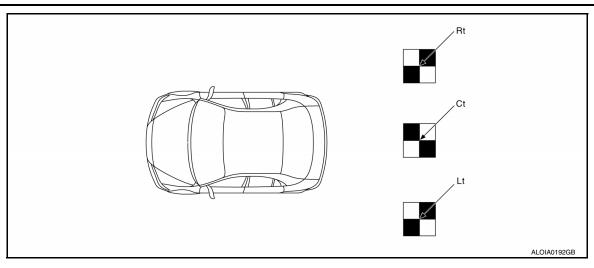
7. Mark point "Ct" at the center of point "E" and "F" on the line "RW".

#### **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".





#### **CAUTION:**

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

>> Go to <a href="DAS-109">DAS-109</a>, "Work Procedure (Rear View Camera Calibration)".

Work Procedure (Rear View Camera Calibration)

INFOID:0000000009464744

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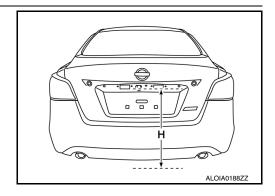
#### **CAUTION:**

Perform the calibration under the specified vehicle condition (fuel full, no-load, specified tire pressure, etc.). Refer to <a href="DAS-107">DAS-107</a>, "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".

#### **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.
- 4. Input the rear view camera height "H", and then touch "APPLY".
- 5. Confirm that the same value is displayed on the center display.
- 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.
- 8. Confirm the displayed item.
- "Completed": Select "Completion".
- Otherwise, perform the following services:

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Revision: November 2013 DAS-109 2014 Altima NAM

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 activated	Rear view camera unit malfunction.	Position the target appropriately 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-108</u> , "Work Procedure (Target Setting)".
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 appropriately 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-107</u> , "Work Procedure (Preparation)".

#### 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 <a href="DAS-89">DAS-89</a>, "DTC Index".

NO >> GO TO 4.

### 4. ACTION TEST

Test the system operation by action test. Refer to DAS-104, "Description".

>> Work End.

#### C1A03 VEHICLE SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

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INFOID:0000000009464746

## DTC/CIRCUIT DIAGNOSIS

### C1A03 VEHICLE SPEED SENSOR

INFOID:000000009464745

#### DTC DETECTION LOGIC

DTC 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.	ABS actuator and electric unit (control unit)     ITS control unit

#### DTC CONFIRMATION PROCEDURE

## 1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition ON.
- 2. Perform "All DTC Reading" with CONSULT.
- 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 <u>DAS-111</u>, "<u>Diagnosis Procedure</u>".

NO >> Refer to GI-43, "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. Refer to BRC-45, "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-128</u>, "Removal and Installation".

NO >> Replace ITS control unit. Refer to <u>DAS-68</u>, "Removal and Installation".

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Revision: November 2013 DAS-111 2014 Altima NAM

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### C1A04 ABS/TCS/VDC SYSTEM

DTC Logic

#### 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).	ABS actuator and electric unit (control unit)     ITS 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 "C1A04" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".

#### Is "C1A04" detected as the current malfunction?

YES >> Refer to <u>DAS-112</u>, "<u>Diagnosis Procedure</u>".

NO >> Inspection End.

### Diagnosis Procedure

INFOID:0000000009464748

## 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-45, "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-128</u>, "Removal and Installation".
- NO >> Replace ITS control unit. Refer to <a href="DAS-68">DAS-68</a>, "Removal and Installation".

#### C1A39 STEERING ANGLE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

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INFOID:0000000009464750

### C1A39 STEERING ANGLE SENSOR

DTC Logic

#### 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.	Steering angle sensor     ITS control unit

#### DTC CONFIRMATION PROCEDURE

## 1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition ON.
- 2. Perform "All DTC Reading" with CONSULT.
- 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 <u>DAS-113</u>, "<u>Diagnosis Procedure</u>".

NO >> Refer to GI-43, "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 BRC-45, "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. Is any DTC detected except for ITS?

YES >> Replace steering angle sensor. Refer to <a href="mailto:BRC-132">BRC-132</a>, "Removal and Installation".

NO >> Replace ITS control unit. Refer to <a href="DAS-68">DAS-68</a>, "Removal and Installation".

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Revision: November 2013 DAS-113 2014 Altima NAM

### U0122 VDC P-RUN DIAG

DTC Logic

#### 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 <u>DAS-114</u>, "<u>Diagnosis Procedure</u>".

NO >> Refer to GI-43, "Intermittent Incident".

## Diagnosis Procedure

INFOID:0000000009464752

## $1.\mathsf{check}$ 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-128</u>, "Removal and Installation".

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

< DTC/CIRCUIT DIAGNOSIS >

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INFOID:0000000009464754

## U0416 VDC CHECKSUM DIAG

DTC Logic

#### 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 <u>DAS-115</u>, "<u>Diagnosis Procedure</u>".

NO >> Refer to GI-43, "Intermittent Incident".

### Diagnosis Procedure

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-128</u>, "Removal and Installation".

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Revision: November 2013 DAS-115 2014 Altima NAM

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

< DTC/CIRCUIT DIAGNOSIS >

[LDW]

## **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.

## Diagnosis Procedure

INFOID:0000000009464756

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-SULT Function (ABS)"</u>.

#### **U1000 CAN COMM CIRCUIT**

< DTC/CIRCUIT DIAGNOSIS >

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### U1000 CAN COMM CIRCUIT

Description INFOID:0000000009464757

#### 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

#### 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 communication signal for 2 seconds or more	CAN communication system     ITS communication system

#### NOTE:

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

### Diagnosis Procedure

INFOID:0000000009464759

## 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.
- 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-117</u>, "<u>Description</u>".

NO >> Refer to GI-43, "Intermittent Incident".

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Revision: November 2013 DAS-117 2014 Altima NAM

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

< DTC/CIRCUIT DIAGNOSIS >

[LDW]

## U1010 CONTROL UNIT (CAN)

Description INFOID:000000009464760

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
U1010	CONTROL UNIT (CAN)	If ITS control unit detects malfunction by CAN controller initial diagnosis	ITS control unit

## Diagnosis Procedure

INFOID:0000000009464762

## 1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn the MAIN switch of ITS system ON.
- 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-68</u>, "Removal and Installation".

NO >> Inspection End.

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

< DTC/CIRCUIT DIAGNOSIS >

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## U111A REAR CAMERA IMAGE SIGNAL CIRCUIT

DTC Logic

#### 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:0000000009464764

Regarding Wiring Diagram information, refer to DAS-91, "Wiring Diagram".

## 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 control unit		Rear Camera		Continuity	
Connector	Terminal	Connector Terminal		Continuity	
M59	51	B35	7	Yes	
IVIOS	52	533	8	165	

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

ITS cor	ntrol unit		Continuity
Connector Terminal		Ground	Continuity
M59	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				
(+) ITS control unit			Condition	Voltage (Approx.)	
		(-)	Condition		
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 <a href="DAS-68">DAS-68</a>, "Removal and Installation".

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#### U111A REAR CAMERA IMAGE SIGNAL CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

[LDW]

## $\overline{3}$ .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	ITS control unit		Rear View Camera	
Connector	Terminal	Connector Terminal		Continuity
M59	M50 50		1	Yes
IVIJ9	66	B35	5	res

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
WIJ9	66		INO

#### 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.

	Terr	ninal			
(+) (-)		-)	Condition	Voltage	
	ITS cor	ntrol 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 -40 μs ALOIA0179ZZ

#### Is inspection result normal?

YES >> Replace ITS control unit. Refer to <u>DAS-68</u>, "Removal and Installation".

NO >> Replace rear view camera. Refer to <u>DAS-143</u>, "Removal and Installation".

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

< DTC/CIRCUIT DIAGNOSIS >

[LDW]

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### U1232 STEERING ANGLE SENSOR

DTC Logic

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:0000000009464766

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

1. Turn the ignition switch ON.

- 2. Perform registration of the neutral position of the steering angle sensor. Refer to <u>DAS-83</u>, "CONSULT <u>Function (AVM)"</u>.
- 3. Check "Self Diagnostic Result" of "AVM" with CONSULT. Refer to DAS-83, "CONSULT Function (AVM)".

#### Is "ST ANGLE SEN CALIB" detected?

YES >> GO TO 2.

NO >> Inspection End.

## 2. CHECK STEERING ANGLE SENSOR

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Check steering angle sensor.

#### Is the inspection result normal?

YES >> Replace ITS control unit. Refer to <u>DAS-68</u>, "Removal and Installation".

NO >> Repair or replace malfunctioning parts.

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

< DTC/CIRCUIT DIAGNOSIS >

[LDW]

### U1305 CAMERA IMAGE CALIB

DTC Logic

#### 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:0000000009464768

## 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-83, "CONSULT Function (AVM)"</u>. If problem persists, repair or replace the malfunctioning part.

NO >> Refer to GI-43, "Intermittent Incident".

#### **U1308 CAMERA CONFIG**

< DTC/CIRCUIT DIAGNOSIS >

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### **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:0000000009464770

## 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-83, "CONSULT Function (AVM)"</u>.

NO >> Refer to GI-43, "Intermittent Incident".

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INFOID:0000000009464772

### U1309 PUMP UNIT CURRENT

DTC Logic

#### 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	Rear view camera washer control unit     Harness     ITS control unit

#### DTC CONFIRMATION PROCEDURE

## 1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- 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 <u>DAS-124</u>, "<u>Diagnosis Procedure</u>".

NO >> Inspection End.

### Diagnosis Procedure

Regarding Wiring Diagram information, refer to DAS-91, "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.
- Check voltage between rear view camera washer control unit connector and ground.

Terminal				
(+)				Voltage (Approx.)
Rear view camera washer control unit		(-)	Condition	
Connector	Terminal			
B16	12	Ground	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

- Turn the ignition switch OFF.
- 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	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

Disconnect the ITS control unit connector.

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

#### < DTC/CIRCUIT DIAGNOSIS >

[LDW]

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

ITS cor	ITS control unit		mera washer	Continuity
Connector	Terminal	Connector Terminal		
M58	2	B16	7	Yes
IVISO	3	D10	8	163

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	1	INO

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
D10	2	DII	2	ies

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

Rear view camera washer control unit			Continuity
Connector	Terminal	Ground	Continuity
D16	1	Ground	No
B16	2		INO

#### Is inspection result normal?

YES >> GO TO 5.

NO >> Repair the harness or connector.

### ${f 5}.$ 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.

## 6. CHECK REAR VIEW CAMERA AIR PUMP MOTOR ITS CONTROL UNIT SUPPLY CIRCUIT

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

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### **U1309 PUMP UNIT CURRENT**

[LDW]

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 <u>DAS-68</u>, "Removal and Installation".

#### **U130B REAR CAMERA COMM ERROR**

< DTC/CIRCUIT DIAGNOSIS >

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INFOID:0000000009464774

### U130B REAR CAMERA COMM ERROR

DTC Logic INFOID:0000000009464773

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U130B	REAR CAMERA COMM ERROR	ITS control unit receives the incorrect communication signal from rear view camera.	Rear view camera     Harness     ITS control unit

#### DTC CONFIRMATION PROCEDURE

## 1. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON.
- 2. Perform "All DTC Reading" with CONSULT.
- 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-127, "Diagnosis Procedure".

NO >> Inspection End.

### Diagnosis Procedure

Regarding Wiring Diagram information, refer to DAS-91, "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

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

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

#### Is the inspection result normal?

YES >> Replace the ITS control unit. Refer to <a href="DAS-68">DAS-68</a>, "Removal and Installation".

NO >> Replace rear view camera. Refer to <a href="DAS-143">DAS-143</a>, "Removal and Installation". Ν

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**DAS-127** Revision: November 2013 2014 Altima NAM

INFOID:0000000009464776

### U1310 PUMP UNIT CIRCUIT

DTC Logic

#### 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	Rear view camera washer control unit     Harness     ITS control unit

#### 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 <u>DAS-128</u>, "<u>Diagnosis Procedure</u>".

NO >> Inspection End.

### Diagnosis Procedure

Regarding Wiring Diagram information, refer to DAS-91, "Wiring Diagram".

## 1.CHECK REAR VIEW CAMERA AIR PUMP MOTOR POWER SUPPLY CIRCUIT

- 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	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

Disconnect the ITS control unit connector.

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

#### < DTC/CIRCUIT DIAGNOSIS >

[LDW]

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

ITS control unit		Rear view camera washer control unit		Continuity
Connector	Terminal	Connector Terminal		
M58	ME9 2		7	Yes
IVIO	3	B16	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
IVIO	3	<del> </del>	INO

#### 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		1	Yes
D10	2	B17	2	162

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	Oround	No
ы	2		NO

#### Is inspection result normal?

YES >> GO TO 5.

NO >> Repair the harness or connector.

### ${f 5}.$ 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.

## 6.CHECK REAR VIEW CAMERA AIR PUMP MOTOR ITS CONTROL UNIT SUPPLY CIRCUIT

- 1. Reconnect the ITS control unit connector.
- 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.

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### **U1310 PUMP UNIT CIRCUIT**

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	Terminal	Condition	Voltage (Approx.)	
(+)				
Rear view camera washer control unit				(-)
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 <u>DAS-68</u>, "Removal and Installation".

#### POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

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### POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:0000000009464777

Regarding Wiring Diagram information, refer to DAS-91, "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		switch	
	20 Grou	20 Ground	OFF	Battery voltage
M58			ON	Battery voltage
			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.
- 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.

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### WARNING SYSTEMS SWITCH CIRCUIT

## **Component Function Check**

INFOID:0000000009464778

## 1. CHECK WARNING SYSTEMS SWITCH INPUT SIGNAL

- 1. Turn the ignition switch ON.
- 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
	Warning systems switch is not pressed	OFF

#### Is the inspection result normal?

YES >> Warning systems switch circuit is normal.

NO >> Refer to DAS-132, "Diagnosis Procedure".

### Diagnosis Procedure

INFOID:0000000009464779

Regarding Wiring Diagram information, refer to <a href="DAS-91">DAS-91</a>, "Wiring Diagram".

## 1. CHECK WARNING SYSTEMS SWITCH SIGNAL INPUT

- 1. Turn the ignition switch ON.
- Check voltage between ITS control unit harness connector and ground.

Terminals			Condition		
(+)		(-)	Condition	Voltage	
ITS cor	ITS control unit		Warning	(Approx.)	
Connector	Terminal	Ground	systems switch		
MEQ	M58 32		Pressed	0 V	
IVIOO			Released	12 V	

#### Is the inspection result normal?

YES >> Replace the ITS control unit. Refer to DAS-68, "Removal and Installation".

NO >> GO TO 2.

## 2. CHECK WARNING SYSTEMS SWITCH

- 1. Turn ignition switch OFF.
- 2. Remove warning systems switch.
- Check warning systems switch. Refer to <u>DAS-133</u>, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace the warning systems switch. Refer to <a href="DAS-142">DAS-142</a>, "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	Connector Terminal		Continuity
M62	8		Yes

#### Is the inspection result normal?

YES >> GO TO 4.

#### WARNING SYSTEMS SWITCH CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

[LDW]

NO >> Repair harness or connector.

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

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

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

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#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair the harnesses or connectors.

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## 5. CHECK WARNING SYSTEMS SWITCH SIGNAL INPUT CIRCUIT FOR SHORT

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

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

#### Is the inspection result normal?

YES >> Replace the ITS control unit. Refer to DAS-68, "Removal and Installation".

NO >> Repair the harnesses or connectors.

INFOID:0000000009464780

## Component Inspection

## 1. CHECK WARNING SYSTEMS SWITCH

Check continuity of warning systems switch.

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

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#### Is the inspection result normal?

YES >> Inspection End.

NO >> Replace the warning systems switch. Refer to DAS-142, "Removal and Installation".

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#### WARNING SYSTEMS ON INDICATOR CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[LDW]

INFOID:0000000009464781

INFOID:0000000009464782

### WARNING SYSTEMS ON INDICATOR CIRCUIT

## **Component Function Check**

## 1. CHECK WARNING SYSTEMS ON INDICATOR

- Turn the ignition switch ON.
- 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-134</u>, "<u>Diagnosis Procedure</u>".

### Diagnosis Procedure

Regarding Wiring Diagram information, refer to DAS-91, "Wiring Diagram".

## 1. CHECK WARNING ON INDICATOR POWER SUPPLY CIRCUIT

- 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

- 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 cor	ITS control unit		Warning system switch	
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 >

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INFOID:0000000009464783

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ITS cor	ntrol unit		Continuity		
Connector Terminal		Ground	Continuity		
M58 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-135, "Component Inspection".

#### Is the inspection result normal?

YES >> Replace the ITS control unit. Refer to <a href="DAS-68">DAS-68</a>, "Removal and Installation".

NO >> Replace warning systems switch. <u>DAS-142, "Removal and Installation"</u>.

## Component Inspection

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		O a salitita a	Warning sys-
(+)	(-)	Condition	tems ON indica- tor
5	3	When the battery voltage is applied	On
		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-142</u>, "Removal and Installation".

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#### WARNING BUZZER CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[LDW]

INFOID:0000000009464784

### WARNING BUZZER CIRCUIT

## Component Function Check

## 1. CHECK WARNING BUZZER

- 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-136</u>, "<u>Diagnosis Procedure</u>".

### Diagnosis Procedure

INFOID:0000000009464785

## 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-68</u>, "Removal and Installation".

NO >> Replace the combination meter (buzzer).

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## SYMPTOM DIAGNOSIS

## LDW SYSTEM SYMPTOMS

Symptom Table

#### NOTE:

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

• LDW: DAS-77, "System Description"

Sympt	.om	Possible cause	Inspection item/Reference page
	Lane departure warning lamp (orange) does not illuminate.	Combination meter     ITS control unit	Lane departure warning lamp does not turn ON Refer to DAS-138, "Description"
Indicator/warning lamps do not	Warning systems ON indicator 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 DAS-134, "Component Function Check"
illuminate when ignition switch OFF ⇒ ON	Lane departure warning lamp (orange) ON indicator lamp (white) does not illuminate.	Combination meter     ITS control unit	Lane departure warning lamp does not turn ON Refer to <u>DAS-138</u> , " <u>Description</u> "
	All of indicator/warning lamps does not illuminate;  • Lane departure warning lamp (orange)  • Warning systems ON indicator	Power supply and ground circuit of ITS control unit     ITS control unit	Power supply and ground circuit of ITS control unit Refer to DAS-131, "Diagnosis Procedure"
LDW system is not activated. (Indicator/warning lamps illuminate when ignition switch OFF ⇒ ON)	Warning systems ON indicator is not turned ON ⇔ OFF when operating warning systems switch	Harness between ITS control unit and warning systems switch     Harness between warning systems switch and ground     Warning systems switch     ITS control unit	Warning systems switch circuit     Refer to DAS-132. "Component Function Check"     LDW system setting cannot be turned ON/OFF on the navigation screen     Refer to DAS-140. "Diagnosis Procedure"
	Warning buzzer is not sounding. (Lane departure warning lamp is activated.)	Warning buzzer     ITS control unit	Refer to DAS-136, "Component Function Check"
Warning functions are not timely (Example)  • Does not function when driving  • Functions when driving in a lar  • Functions in a different position	ne	Lane camera unit     ITS control unit	Camera calibration DAS-107, "Description"
Functions when changing the counal	urse in direction of the turn sig-	Turn indicator signal (CAN)  BCM  ITS control unit	System operates even when using turn signal . Refer to DAS-139. "Description"

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#### LANE DEPARTURE WARNING LAMP DOES NOT TURN ON

< SYMPTOM DIAGNOSIS >

[LDW]

### LANE DEPARTURE WARNING LAMP DOES NOT TURN ON

Description INFOID:000000009464787

The lane departure warning lamp in the combination meter does not turn ON when turning on the ignition switch

### Diagnosis Procedure

INFOID:0000000009464788

## 1. CHECK LANE DEPARTURE WARNING LAMP

- 1. Check that "LANE DEPARTURE W/L" operates normally in "ACTIVE TEST" of "AVM".
- 2. Operate the test items to check that the lane departure warning lamp blinks

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 2.

## 2.CHECK COMBINATION METER

Turn the ignition switch from OFF to ON to check that "LANE W/L" included in "DATA MONITOR" in "METER/M&A" operates normally.

#### Is the inspection result normal?

YES >> Replace the combination meter. Refer to <a href="MWI-82">MWI-82</a>, "Removal and Installation".

NO >> GO TO 3.

## 3.check self-diagnosis results 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 MWI-27, "DTC Index".

#### Is any DTC detected?

YES >> Repair or replace malfunctioning parts.

NO >> GO TO 4.

## 4. CHECK SELF-DIAGNOSIS RESULTS OF ITS CONTROL UNIT

Check if the DTC is detected in self-diagnosis results of "AVM". Refer to DAS-89, "DTC Index".

#### Is any DTC detected?

YES >> Repair or replace malfunctioning parts.

NO >> Replace the ITS control unit. Refer to <u>DAS-68</u>, "Removal and Installation".

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

< SYMPTOM DIAGNOSIS >

[LDW]

## THE SYSTEM OPERATES EVEN WHEN USING TURN SIGNAL Α Description INFOID:0000000009464789 The warning of Lane Departure Warning (LDW) is activated during the use of a turn signal. В For the operational conditions of Lane Departure Warning (LDW), refer to DAS-77, "System Description". **Diagnosis Procedure** INFOID:0000000009464790 1. CHECK TURN SIGNAL OPERATION Check that both right and left turn signals are operational. D Is the inspection result normal? YFS >> GO TO 2. Е NO >> Repair or replace malfunctioning parts. Refer to <a href="DAS-137">DAS-137</a>, "Symptom Table". 2. CHECK SELF-DIAGNOSIS RESULTS Perform "All DTC Reading" with CONSULT. F Check if the DTC is detected in self-diagnosis results of "AVM" Refer to <u>DAS-89</u>, "<u>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-68, "Removal and Installation". Н M Ν

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### 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 INFORMATION DISPLAY

Description INFOID:000000009464791

- · LDW system setting is not selectable on the navigation screen.
- NOTE:

When the ignition switch is in ACC position, LDW system setting cannot be changed.

- "Lane Departure Warning" is not indicated on the navigation screen.
- The switching between ON and OFF cannot be performed by operating the navigation system.
- The item of "Lane Departure Warning" on the navigation screen is not active.
- 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:
- After replacing AV control unit.
- After erasing connection history of the navigation system.
- After erasing self-diagnosis results of AV control unit.
- · The LDW or LDP 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:0000000009464792

## 1. CHECK LDW SYSTEM SETTING

- 1. Start the engine.
- 2. Check that the LDW system settings is selectable on the navigation screen.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

## 2.PERFORM THE SELF-DIAGNOSIS

- Perform "All DTC Reading" with CONSULT.
- 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-89, "DTC Index"
- MULTI AV (with BOSE): AV-328, "DTC Index"
- MULTI AV (without BOSE): <u>AV-231, "DTC Index"</u>
- METER/M&A: <u>MWI-27</u>, "<u>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 "LDW SELECT" operates normally in "DATA MONITOR" of "AVM" with CONSULT.

#### Is the inspection result normal?

YES >> Refer to DAS-83, "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 <a href="DAS-68">DAS-68</a>, "Removal and Installation".

NO >> Repair or replace malfunctioning parts.

#### NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS > [LDW]

### NORMAL OPERATING CONDITION

Description INFOID:000000009464793

#### 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.)

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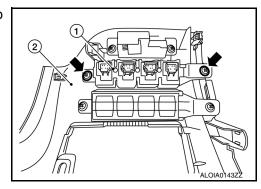
## REMOVAL AND INSTALLATION

## WARNING SYSTEMS SWITCH

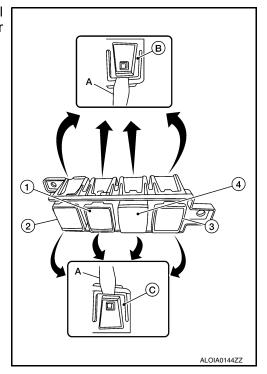
#### Removal and Installation

#### **REMOVAL**

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



- 3. 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**

Installation is in the reverse order of removal.

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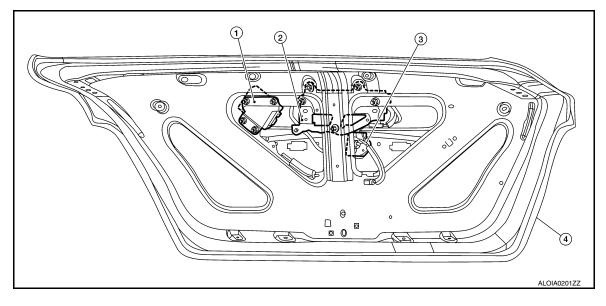
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### **REAR VIEW CAMERA**

**Exploded View** 



- 1. Rear view camera washer control unit
- 2. Rear view camera air pump motor
- 3. Rear view camera

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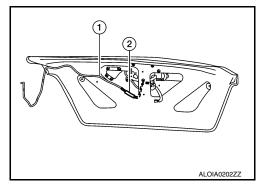
4. Trunk lid

### Removal and Installation

**REMOVAL** 

1. Remove rear view camera air pump motor. Refer to <u>DAS-145</u>, "Removal and Installation".

2. Disconnect the rear washer tube (1) from rear view camera (2).



3. Disconnect the harness connector from the rear view camera and remove.

#### **INSTALLATION**

Installation is in the reverse order of removal.

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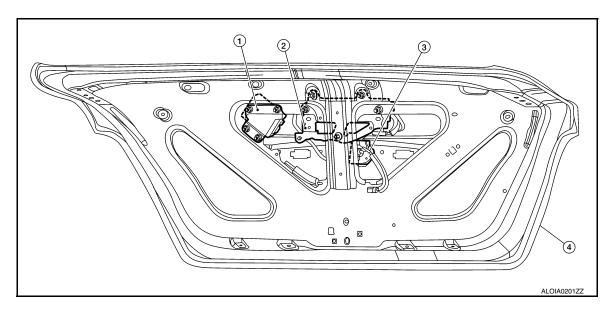
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## REAR VIEW CAMERA WASHER CONTROL UNIT

Exploded View



- 1. Rear view camera washer control unit
- 2. Rear view camera air pump motor
- 3. Rear view camera

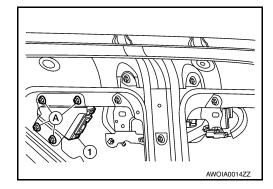
4. Trunk lid

#### Removal and Installation

INFOID:0000000009978538

#### **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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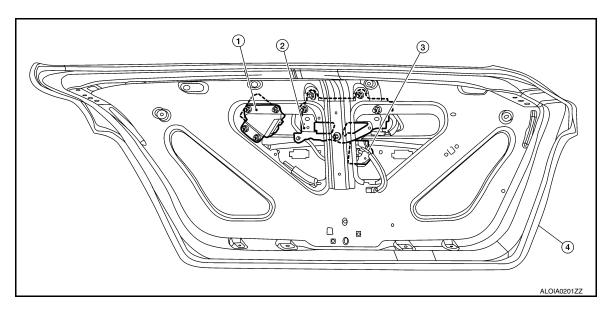
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## REAR VIEW CAMERA AIR PUMP MOTOR

Exploded View



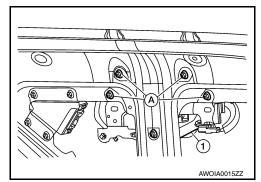
- 1. Rear view camera washer control unit
- 2. Rear view camera air pump motor
- 3. Rear view camera

4. Trunk lid

## Removal and Installation

#### **REMOVAL**

- 1. Remove the trunk lid finisher. Refer to <a href="INT-33">INT-33</a>, "TRUNK LID FINISHER: Removal and Installation".
- 2. Disconnect the air tubes 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 (1).



## **INSTALLATION**

Installation is in the reverse order of removal.

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**PRECAUTIONS** 

< PRECAUTION > [BSW]

# **PRECAUTION**

## **PRECAUTIONS**

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

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

#### **WARNING:**

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

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

#### **WARNING:**

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

Precaution for 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.

INFOID:0000000009464802

- 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.

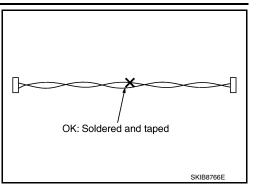
Revision: November 2013 DAS-146 2014 Altima NAM

#### **PRECAUTIONS**

< PRECAUTION > [BSW]

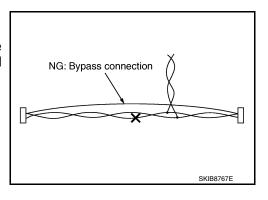
Solder the repaired area and wrap tape around the soldered area.
 NOTE:

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

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#### **WARNING:**

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

- Do not use the BSW system when driving with free rollers or on a chassis dynamometer.
- Do not perform BSW ACTIVE TESTS while driving.
- Do not disassemble or alter the rear view camera.
- Do not use the rear view camera when removed from the vehicle.
- Do not 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.

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Revision: November 2013 DAS-147 2014 Altima NAM

## **PREPARATION**

[BSW] < PREPARATION >

# **PREPARATION**

# **PREPARATION**

Special Service Tool	INFOID:000000009464804
The actual shapes of the tools may differ from those illustrated here.	
Tool number (TechMate No.) Tool name	Description
(J-46534) Trim Tool Set	Removing trim components

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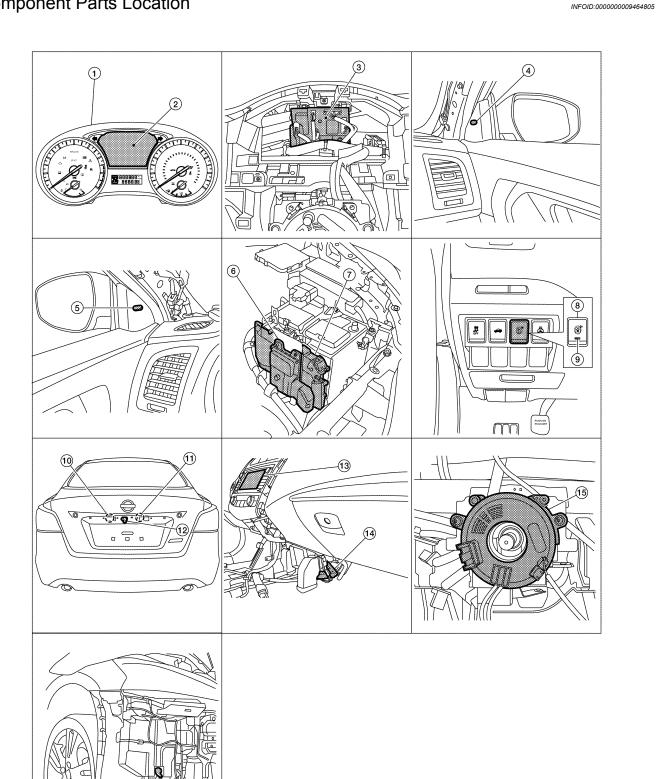
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# SYSTEM DESCRIPTION

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# **COMPONENT PARTS**

**Component Parts Location** 



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- 1. Combination meter
- Blind spot warning indicator RH
- 7. **ECM**
- 10. Rear view camera washer control unit
- 13. AV control unit (center display) (with navi- 14. ITS control unit gation system and bose audio system) Audio unit (center display) (with display audio system and bose audio system)
- 16. Washer fluid level switch (view with front fascia removed)

- 2. Vehicle information display
- 5. Blind spot warning indicator LH
- 8. Warning systems switch
- 11. Rear view camera air pump motor
- (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 Description

INFOID:0000000009464806

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	Detects the lane marker by the built-in camera     Transmits detected lane condition signal to ITS control unit
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	Transmits turn signal indicator to ITS control unit via CAN communication     Transmits dimmer signal to ITS control unit via CAN communication
ECM	Transmits engine speed signal to ITS control unit via CAN communication
TCM	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 (with navigation system and bose audio system)	Receives the various systems and camera signals via CAN communication and routes them to the center display
Audio unit (with display audio system and bose audio system)	Receives the various systems and camera signals and routes them to the center display
Center display	Displays the various system screen signals according to the priority level received via CAN communication

# **COMPONENT PARTS**

## < SYSTEM DESCRIPTION >

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	Description
Rear view camera washer control nit	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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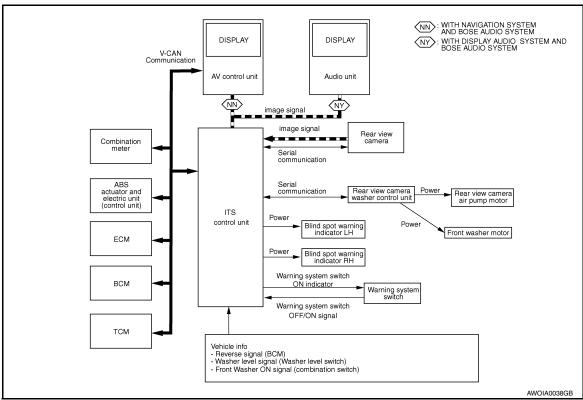
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# **SYSTEM**

# **System Description**

INFOID:0000000009464807

## 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	Signal name		Description
ECM	CAN Communication Engine status signal		Receive engine status
BCM	CAN communication	Door open status signal	Receive door open status
DCIVI	CAN communication	Light status signal	Receive light status
ABS actuator and electric unit (control unit)	CAN communication	Wheel speed signal	Receive wheel speed
TCM	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 Moving 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)	

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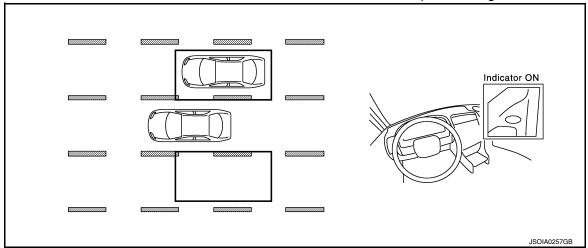
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#### **FUNCTION DESCRIPTION**

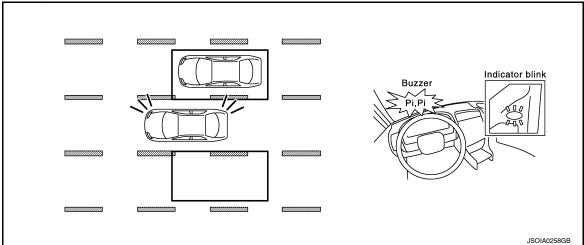
- The BSW system can help alert the driver of other vehicles in adjacent lanes when changing lanes.
- The BSW system uses rear view camera near the rear bumper to detect vehicles in an adjacent lane.
- · The rear view camera can detect vehicles on either side of vehicle within the detection zone shown as illus-
- 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 rear view camera detects vehicles in the detection zone, the Blind Spot Warning indicator illuminates.



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

**DAS-153** Revision: November 2013 2014 Altima NAM

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control unit performs the control when the following conditions are satisfied:

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

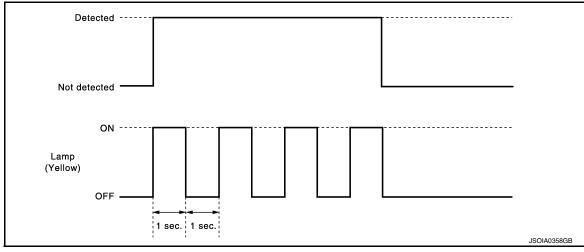
#### NOTE:

- \*: 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	_

<sup>\*:</sup> 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)

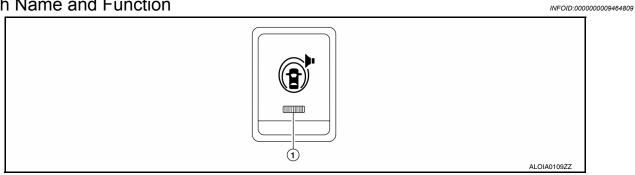
INFOID:0000000009464808

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	

# **OPERATION**

# Switch Name and Function

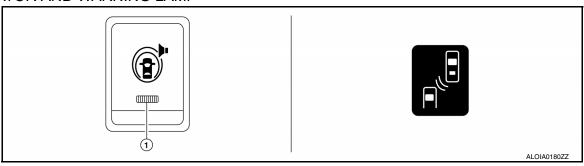


No.	Name	Function
1	Warning systems switch	Turns BSW system ON/OFF (When the setting of BSW system on the vehicle information display setting screen is ON)

# System Display and Warning

INFOID:0000000009464810

# INDICATOR AND WARNING LAMP



No.	Name	Description	
1	Warning systems ON indicator	Indicates that the LDW system and/or BSW system is ON	
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>	

# DISPLAY AND WARNING OPERATION

Vehicle condition/ Driver's operation		Action			
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
OFF	_	_	_	OFF	OFF

**DAS-155** Revision: November 2013 2014 Altima NAM В

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

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## HANDLING PRECAUTION

## **Precautions for Blind Spot Warning**

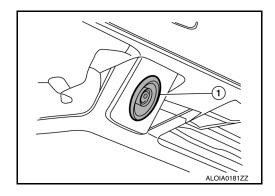
INFOID:0000000009464811

#### 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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Revision: November 2013 DAS-157 2014 Altima NAM

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

< SYSTEM DESCRIPTION >

[BSW]

# DIAGNOSIS SYSTEM (ITS CONTROL UNIT)

**CONSULT Function (AVM)** 

#### INFOID:0000000009951646

#### **CAUTION:**

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

#### **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-164, "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 actuator 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

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

#### < SYSTEM DESCRIPTION >

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Monitored item [Unit]	Description
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
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
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

## **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 IMAGE (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	_
WASH ACTIVE	OFF	Activates the washer to clean the lens of real camera	
LED LH INDICATOR	ON	Flashes the left side LED light for ITS system	
LED LIT INDICATOR	OFF	Plasties the left side LED light for 113 system	
LED RH INDICATOR	ON	Flaches the right eide LED light for ITS system	
LED KH INDICATOR	OFF	Flashes the right side LED light for ITS system	
AIR ACTIVE	ON	Activates the air pump to clean the lens of rear camera	
AIR ACTIVE	OFF	Activates the all pump to clean the lens of real camera	
AIR & WASH ACTIVE	ON	Activates the air pump and washer to clean the lens of rear camera	
AIR & WASH ACTIVE	OFF	Activates the all pump and washer to dean the lens of real camera	

**BSW ON INDICATOR** 

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

## < SYSTEM DESCRIPTION >

[BSW]

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
BOW 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.

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# **ECU DIAGNOSIS INFORMATION**

# ITS CONTROL UNIT

Reference Value

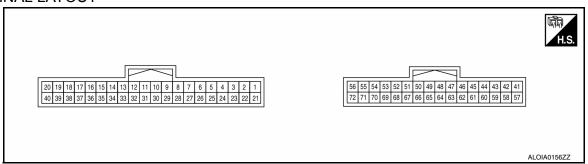
## VALUES ON THE DIAGNOSIS TOOL

Monitor item		Condition	Value/Status
ST ANGLE SENSOR	Ignition switch ON	Steering angle signal is received	On
SIGNAL	Igrillion Switch ON	Steering angle signal is not received	Off
DEVEDOE CIONAL	lanition quitab ON	Shift selector in R (reverse)	On
REVERSE SIGNAL	Ignition switch ON	Shift selector is not in R (reverse)	Off
VEHICLE SPEED	VA/Initial additions	Vehicle speed signal is received	On
SIGNAL	While driving	Vehicle speed signal is not received	Off
CAMERA SWITCH	landition assistate ON	Camera switch is pressed	On
SIGNAL	Ignition switch ON	Camera switch is not pressed	Off
CAMERA OFF SIG-	Leaving and Make ON	Purpose switch is pressed	On
NAL	Ignition switch ON	Purpose switch is not pressed	Off
ST ANGLE SENSOR	landition assistate ON	Steering angle sensor type is displayed	Absolute
TYPE	Ignition switch ON	Steering angle sensor type is not received	Not
STEERING GEAR	Ignition quitals ON	Pattern 1 type of steering gear ratio displayed	Pattern 1
RATIO TYPE	Ignition switch ON	Pattern 2 type of steering gear ratio displayed	Pattern 2
STEERING POSI-	Leaving and Make ON	It recognizes steering position is left	LHD
TION	Ignition switch ON	It recognizes steering position is right	RHD
R-CAMERA COMM		Rear camera serial status is OK	OK
STATUS	Ignition switch ON	Rear camera serial status is not OK	NG
R-CAMERA COMM	Ignition switch ON	Rear camera serial communication signal is received	OK
LINE		Rear camera serial communication signal is not received	NG
	Ignitian quitab ON	Illumination is ON	On
ILL	Ignition switch ON	Illumination is OFF	Off
ITO 014/4	La d'Esta de CNI	ITS switch is pressed	On
ITS SW 1	Ignition switch ON	ITS switch is not pressed	Off
ITO OW 4 IND	La Transactich ON	Indicator of ITS switch 1 is lighting	On
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	N
		Turn signal right is received	Right
REAR CAMERA IM-	landida and the CNI	Camera image signal is received	On
AGE SIGNAL	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
MACH CVA	Innition of the Chi	Wash switch signal is pressed	On
WASH SW	Ignition switch ON	Wash switch signal is not pressed	Off
PUMP COMM STA-	1	Pump communication signal is received	On
TUS	Ignition switch ON	Pump communication signal is not received	Off

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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	Innut	When washer fluid is low (switch closed)		0 V	
(BR)	Ground	washer level switch	Input	switch ON	When washer fluid is not low (switch open)	12 V	
2 (G)	Ground	Washer signal pump to camera	Input	Ignition sw	itch ON	5 V	
3 (W)	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)	Ground	JOW LLD SIGNALIX	Calput	driving	LDW/BSW is not detected	0 V	
20 (G)	Ground	Battery supply	Input	_	_	12 V	
22 (P)	Ground	Serial ground	Output	_	_	0 V	
27 (L)	Ground	CAN -H	_	_	_	_	
28	Ground	nd Reverse	Input	Ignition switch ON	Shift selector in R (reverse)	12 V	
(R)	Ground	Reverse			Shift selector not in R (reverse)	0 V	
32	Ground	Cancel SW output	Input	Ignition	Cancel switch pressed	0 V	
(P)	Giodila	Cancel SW output	IIIput	switch ON	Cancel switch not pressed	12 V	
33	Ground	LED input	Output	Ignition	Warning system is ON	12 V	
(BG)	Giodila	LED IIIput	Output	switch ON	Warning system is OFF	0 V	
37	Ground	SOW LED signal L	Output	While	LDW/BSW detected	12 V	
(W)	Giodila	30W LLD Signal L	Output	driving	LDW/BSW is not detected	0 V	
39 (BG)	Ground	Ignition power supply	Input	Ignition switch 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 >

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Terminal No. (Wire color) Description			Condition	Value	/-	
+	_	Signal name	Input/ Output	Condition	(Approx.)	
52 (W)	Ground	RR CAM ON	Output	Ignition switch ON	6 V	
66 (B)	Ground	RR CAM COMP +	Input	Ignition switch ON	(V) 1 0 -1 -40 μs ALOIA0179ZZ	
68 (G)	Ground	RR CAM CONT	Input	Ignition switch ON	5 V	
69 (B)	Ground	RR CAM COMP +	Input	Ignition switch ON	(V) 1 0 -1 -40 μs ALOIA0179ZZ	F

Fail-safe INFOID:0000000009951649

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
Moving Object Detection (MOD)	Low-pitched tone	Warning lamp MOD icon (on camera screen)	Cancel

# **DTC Inspection Priority Chart**

INFOID:0000000009951650

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>U1111A: 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	C1A03: VHCL SPEED SE CIRC C1A04: VDC FAIL U0122: VDC P-RUN DIAG U0416: VDC CHECKSUM DIAG				

**DAS-163** Revision: November 2013 2014 Altima NAM DTC Index

#### 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 → 1 → 2 ··· 38 → 49 after returning to the normal condition whenever the ignition switch OFF → ON. It returns to 0 when a malfunction is detected again in the process.
- If it is over 49, it is fixed to 49 until the self-diagnosis results are erased.

#### Systems for fail-safe

- A: Lane Departure Warning (LDW)
- · B: Blind Spot Warning (BSW)
- C: Moving Object Detection (MOD)

DTC		\	Narning lam	np	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-186
C1A04	VDC FAIL	ON	ON	ON	A, B, C	DAS-187
C1A39	STRG SEN CIR	ON	ON	ON	A, B, C	DAS-188
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-189
U0416	VDC CHECKSUM DIAG	ON	ON	ON	A, B, C	DAS-190
U0428	STRG SEN CAN CIR 2	ON	ON	ON	A, B, C	DAS-191
U1000 <sup>NOTE</sup>	CAN COMM CIRCUIT	ON	ON	ON	A, B, C	DAS-192
U1010	CONTROL UNIT (CAN)	ON	ON	ON	A, B, C	DAS-193
U111A	REAR CAMERA IMAGE SIGNAL	ON	ON	ON	A, B, C	DAS-194
U1232	ST ANGLE SEN CALIB	ON	ON	ON	A, B, C	DAS-196
U1305	CAMERA IMAGE CALIB	ON	ON	ON	A, B, C	DAS-197
U1308	CAMERA CONFIG	ON	ON	ON	A, B, C	DAS-198
U1309	PUMP UNIT CURRENT	ON	ON	ON	A, B, C	DAS-199
U130B	REAR CAMERA COMM ERROR	ON	ON	ON	A, B, C	DAS-202
U1310	PUMP UNIT CIRCUIT	ON	ON	ON	A, B, C	DAS-203

#### NOTE:

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

## ITS CONTROL UNIT

## < ECU DIAGNOSIS INFORMATION >

[BSW]

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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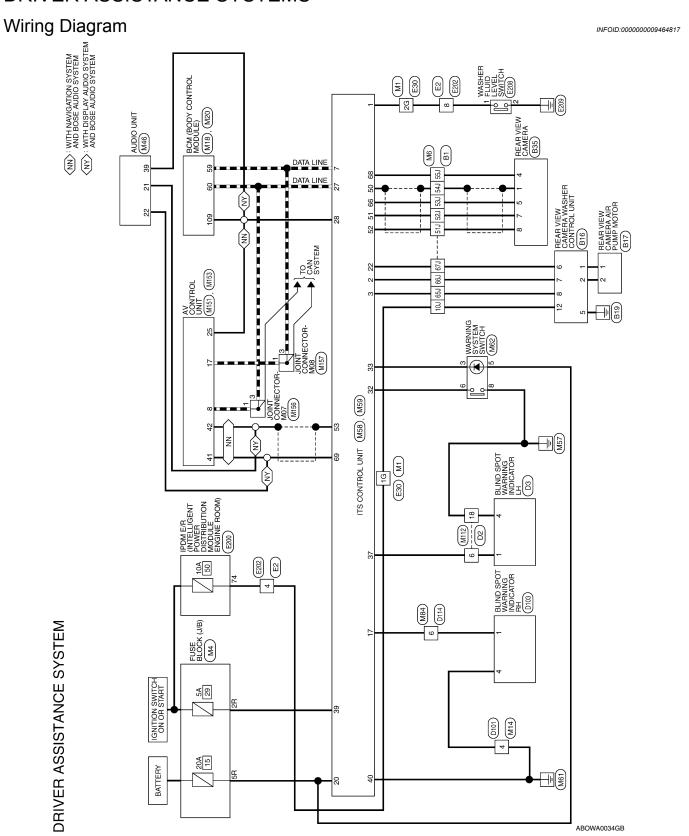
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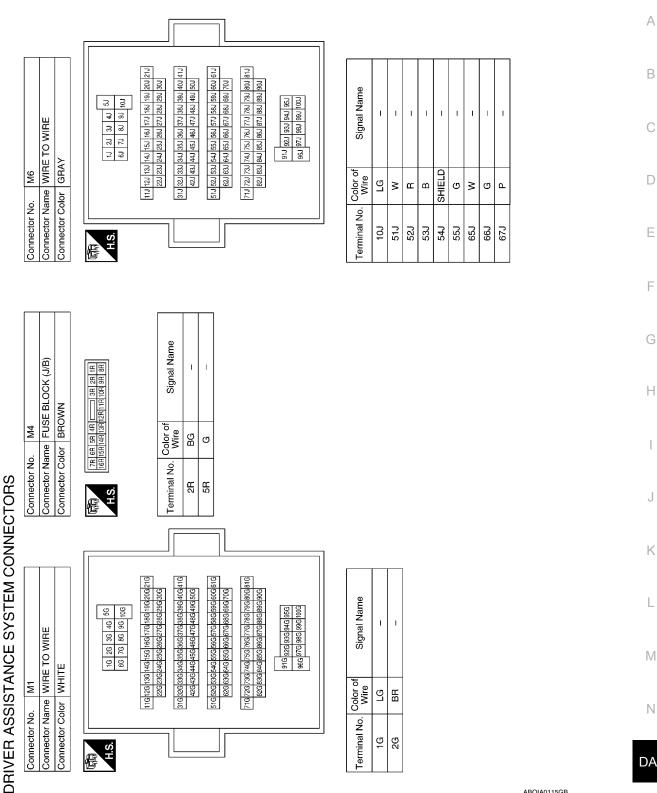
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# WIRING DIAGRAM

# DRIVER ASSISTANCE SYSTEMS





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	TROL		108/107/108/108 120/119/118/117	Vame	SIGNAL	
M20	Connector Name   BCM (BODY CONTROL MODULE)	SLACK	1111101109	of Signal Name	REVERSE SIGNAL	
	or Name E	Connector Color BLACK	116115114113112 128127126125124	Terminal No. Wire	g	
Connector No.	Connecto	Connecto	H.S.	Terminal	109	
			42 41 62 61			
	Connector Name BCM (BODY CONTROL MODULE)	CK	50 49 48 47 46 45 44 43	Signal Name	CAN-L	
M18	me BCN MOI	lor BLA	55 54 53 5 75 74 73 7	Color of Wire	Ь	
Connector No.	Connector Na	Connector Color BLACK	H.S. 60 59 58 57 56 55 54 53 52 51 77 76 75 74 73 72 77	Terminal No. Wire	59	
	WIRE		<u>∞</u> ∞	Signal Name	1	

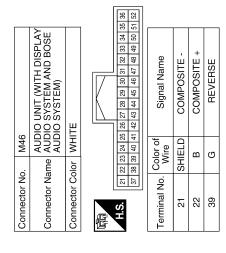
Color of Wire

Terminal No.

GR

Connector Name WIRE TO WIRE Connector Color WHITE

Connector No. M14



ABOIA0116GB

Signal Name	ı	ı	ı	CAN-H	REV	ı	ı	I	CANCEL SW OUTPUT	LED INPUT	I	I	I	SOW LED SIGNAL L	ı	IGN	GND
Color of Wire	-	-	_	٦	В	_	ı	-	Ь	BG	-	-	-	×	1	BG	В
Terminal No.	24	25	56	27	28	59	30	31	32	33	34	35	36	37	38	39	40

Signal Name	I	I	I	ı	I	I	I	RR CAM COMP +	I	RR CAM CONT	COMP OUT +	I	I	1
Color of Wire	ı	ı	1	ı	ı	ı	ı	В	-	ŋ	В	ı	ı	-
Terminal No.	59	09	61	62	63	64	65	99	29	89	69	70	71	72

Signal Name	CAN-L	1	1	1	ı	1	ı	ı	1	ı	SOW LED SIGNAL R	1	ı	B+	1	SERIAL GND	1
Color of Wire	۵	ı	ı	ı	ı	ı	ı	1	ı	ı	ŋ	ı	1	ŋ	ı	Ь	ı
Ferminal No.	7	8	6	10	11	12	13	14	15	16	17	18	19	20	21	22	23

Signal Name	I	ı	-	ı	-	RR CAM GND	RR CAM ON	I	-	I	-	I	_	
Color of Wire	Ι	ı	ı	ı	SHIELD	В	8	SHIELD	-	ı	1	ı	1	
Terminal No. Wire	46	47	48	49	20	51	52	53	24	55	99	25	58	

				22 21							
	ITS CONTROL UNIT	TE		11 10 9 8 7 6 5 4 3 31 30 29 28 27 26 25 24 23	Signal Name	WASH LVL SW	FROM PUMP TO CAMERA C/U	FROM CAMERA C/U TO PUMP	-	I	ı
M58	_	lor WHITE		34 4	Color of Wire	BB	ŋ	≯	1	ı	1
Connector No.	Connector Name	Connector Color	H.S.	20     19     18     17     16     15       40     39     38     37     36     35	Terminal No.	-	2	က	4	5	9

Connector No.	. M59	
Connector Na	ıme ITS	Connector Name ITS CONTROL UNIT
Connector Color WHITE	lor WHI	IE
.S. 25	55 54 53 52 71 70 69 68	52 51 50 49 48 47 46 45 44 43 42 41 62 61 86 65 64 63 62 61 60 59 58 57
Terminal No. Color of Wire	Color of Wire	Signal Name
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Connector Name JOINT CONNECTOR-M07

M156

Connector No.

Connector Color WHITE

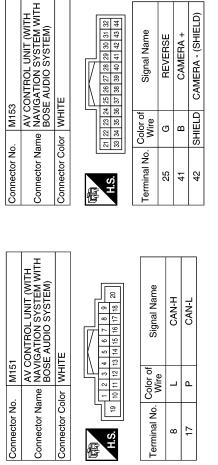
Connector No. M84	Connector No. M112	M112	
Connector Name WIRE TO WIRE	Connector Name WIRE TO WIRE	me WIRE	TO WIRE
Connector Color WHITE	Connector Color WHITE	or WHIT	щ
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Terminal No. Color of Signal Name	Terminal No. Wire	Color of Wire	Signal Name
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Connector Name | WARNING SYSTEM SWITCH

Connector No.

Connector Color GRAY

Signal Name	ı	ı							
Color of Wire	>	В							
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Signal Name	ı								
Color of Wire	<sub>o</sub>								
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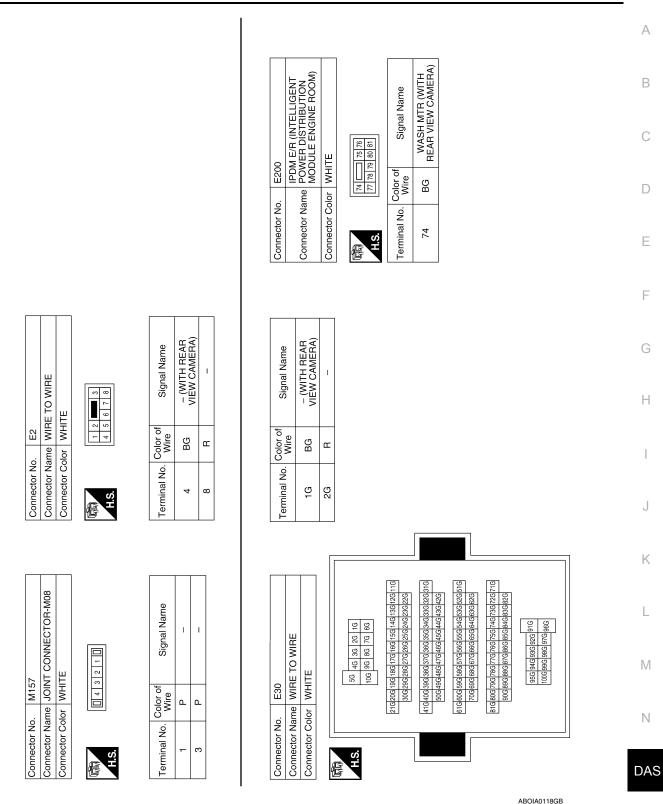
Signal Name 1

Color of Wire \_

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Revision: November 2013

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DAS-171 2014 Altima NAM

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Connector No.	B35
Connector Name	Connector Name   REAR VIEW CAMERA
Connector Color WHITE	WHITE



Signal Name

Terminal No.

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	REAR VIEW CAMERA AIR PUMP MOTOR	TE TI		Signal Name	ı	I
.   1817	me RE/	lor WH		Color of Wire	^	BR
Connector No.	Connector Name	Connector Color WHITE	南 H.S.	Terminal No. Wire	1	2

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Terminal No.	Color of Wire	f Signal Name
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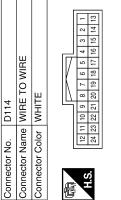
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Signal Name	-	
Color of Wire	В	
Terminal No.	9	

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## DIAGNOSIS AND REPAIR WORK FLOW

[BSW] < BASIC INSPECTION >

# **BASIC INSPECTION**

# DIAGNOSIS AND REPAIR WORK FLOW

Work Flow INFOID:0000000009464818

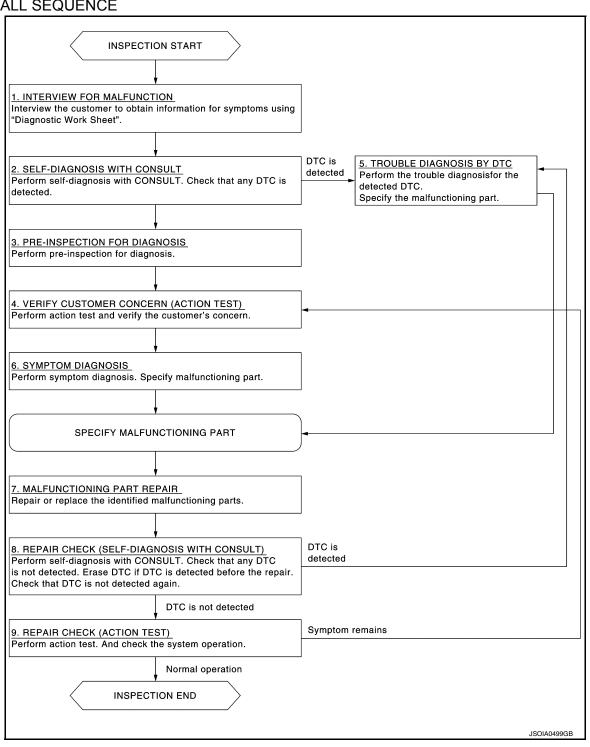
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## **OVERALL SEQUENCE**



## **DETAILED FLOW**

# 1.INTERVIEW FOR MALFUNCTION

Interview the customer to obtain information about symptoms using "Diagnostic Work Sheet". (Refer to DAS-176, "Diagnostic Work Sheet".)

>> 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-178, "Inspection Procedure".

>> GO TO 4.

## 4. ACTION TEST

Perform BSW system action test to check the operation status. Refer to <u>DAS-179</u>, "<u>Description</u>".

>> GO TO 6.

# TROUBLE DIAGNOSIS BY DTC

Perform trouble diagnosis for the detected DTC. Specify a malfunctioning part. Refer to <u>DAS-164, "DTC Index"</u> (ITS CONTROL UNIT).

>> GO TO 7.

# 6. SYMPTOM DIAGNOSIS

Perform symptom diagnosis. Specify malfunctioning part. Refer to <u>DAS-212</u>, "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

## JNOSLIC VVOIK STIEEL

#### 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.

## **DIAGNOSIS AND REPAIR WORK FLOW**

[BSW] < 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
------------	--------

		Model and Year		VIN		
Engine #		Trans.		Mileage		
Incident Date		Manuf. Date		In Service Date		
Symptoms						
	Lane departure warning lamp	☐ Stays ON ☐ Turned ON occasions	☐ Stays ally ☐ Othe			
Indicator/Warning lamps	☐ Warning systems ON indicator	☐ Stays ON	☐ Stays ☐ Othe			
	Other lamps	☐ Stays ON ☐ Turned ON occasions	☐ Stays ally ☐ Othe			
	☐ When using BSW					
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	the course in the turn si function when driving on when driving in a lane. in a different position fro	lane markers.			
Conditions						
Frequency	☐ Continuously	☐ Intermi	ttently			
Light conditions		☐ At night ☐ Backlight	☐ Sunrise/s	sunset (Strong light)		
	☐ Not affected ☐ Vehicle speed	MPH ( km/h)	☐ Vehicle i	s stopped		
Driving conditions			Snowing			
Driving conditions Weather conditions	☐ Not affected ☐ Fine ☐ Clouding	Raining	Others (			
	☐ Fine ☐ Clouding ☐ Not affected ☐ Highway	☐ Raining ☐ In town ☐ Winding roads				
Weather conditions	☐ Fine ☐ Clouding ☐ Not affected ☐ Highway ☐ Uneven roads ☐ Not affected	☐ In town	Others (			

**DAS-177** Revision: November 2013 2014 Altima NAM

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## PRE-INSPECTION FOR DIAGNOSIS

< BASIC INSPECTION > [BSW]

# PRE-INSPECTION FOR DIAGNOSIS

# Inspection Procedure

INFOID:0000000009464820

# 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-182</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**

[BSW] < BASIC INSPECTION > ACTION TEST Α Description INFOID:0000000009464821 Perform action test to verify the customer's concern. Perform action test and check the system operation after system diagnosis. WARNING: Be careful of traffic conditions and safety around the vehicle when performing road test. **CAUTION:**  Fully understand the following items well before the road test; - Precautions: Refer to <u>DAS-73</u>, "Precaution for <u>LDW System Service"</u>. - System description for LDW: Refer to DAS-77, "System Description". D - System description for BSW: Refer to <a href="DAS-152">DAS-152</a>, "System Description". - System description for MOD: Refer to DAS-228, "System Description". - Handling precaution: Refer to DAS-82, "Precautions for Lane Departure Warning". Е Inspection Procedure INFOID:0000000009464822 WARNING: Be careful of traffic conditions and safety around the vehicle when performing road test. **CAUTION:**  Fully understand the following items well before the road test; Precautions: Refer to <u>DAS-73</u>, "<u>Precaution for LDW System Service</u>". - System description for LDW: Refer to <a href="DAS-77">DAS-77</a>, "System Description". - System description for BSW: Refer to DAS-152, "System Description". - System description for MOD: Refer to <a href="DAS-228">DAS-228</a>, "System Description". Handling precaution: Refer to DAS-82, "Precautions for Lane Departure Warning". CHECK BSW SYSTEM SETTING Start the engine. Check that the BSW system setting can be enabled/disabled on the vehicle information display. Turn OFF the ignition switch and wait for 30 seconds or more. Check that the previous setting is saved when the engine starts again. >> GO TO 2. 2.action test for <code>bsw</code> Enable the setting of the BSW system on the vehicle information display. Turn warning systems switch ON (warning systems ON indicator is ON). 2. Check the BSW operation according to the following table. Ν

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## **ACTION TEST**

< BASIC INSPECTION > [BSW]

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 Approx. 29 km/h (18 MPH)	_	_	OFF	OFF
		_	Vehicle is ab- sent	OFF	OFF
	Approx. 32 km/h (20 MPH) or more  ON (vehicle detected direction)	OFF		ON	OFF
ON		km/h (20 MPH) or more	Before turn signal oper- ates vehicle is detected	Blink  200 ms Indicator ON Indicator OFF 200 ms  JSOIA0251GB	Short continuous beeps  80 ms Buzzer ON Buzzer 550 ms JSOIA0252GB
		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-152</u>, "System Description".

>> Inspection End.

## ADDITIONAL SERVICE WHEN REPLACING REAR VIEW CAMERA

[BSW] < BASIC INSPECTION > ADDITIONAL SERVICE WHEN REPLACING REAR VIEW CAMERA Α Description INFOID:0000000009464823 Always perform the calibration after removing and installing or replacing the rear view camera. В The system does not operate normally unless the rear view camera aiming adjustment is performed. Always perform it. Work Procedure INFOID:0000000009464824 CAMERA AIMING ADJUSTMENT D Perform the camera aiming adjustment with CONSULT. Refer to DAS-182, "Description". Е >> GO TO 2. 2.PERFORM SELF-DIAGNOSIS Perform the self-diagnosis of rear view camera with CONSULT. Check if any DTC is detected. F Is any DTC detected? YES >> Perform the trouble diagnosis for the detected DTC. Refer to DAS-164, "DTC Index". NO >> GO TO 3.  ${f 3.}$ LDW/BSW SYSTEM ACTION TEST Perform the LDW/BSW system action test. Refer to DAS-179, "Description". Н 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 Perform WASH ACTIVE on Active Test using CONSULT. 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 → 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 → Check tube with blue marking or check valve >> Inspection End.

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< BASIC INSPECTION > [BSW]

## REAR VIEW CAMERA CALIBRATION

Description INFOID:000000009464825

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:0000000009464826

## 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-164, "DTC Index".

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

## 2.PREPARATION BEFORE REAR VIEW CAMERA CALIBRATION

#### NOTE:

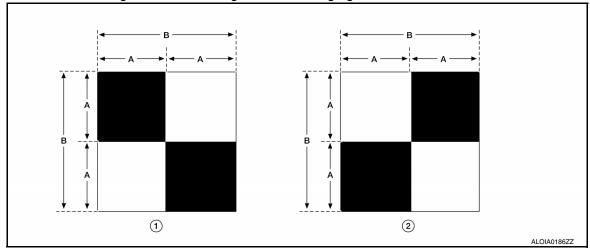
Select the "AVM" to diagnose the ITS control unit by CONSULT.

- 1. Perform pre-inspection for diagnosis. Refer to <a href="DAS-158">DAS-158</a>, "CONSULT Function (AVM)".
- 2. Adjust the tire pressure to the specified pressure value.
- Maintain no-load in vehicle.
- Check if coolant and engine oil are filled up to correct level and fuel tank is full.
- 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.
- 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)

[BSW] < BASIC INSPECTION >

>> Refer to DAS-183, "Work Procedure (Target Setting)".

## Work Procedure (Target Setting)

#### INFOID:0000000009464827

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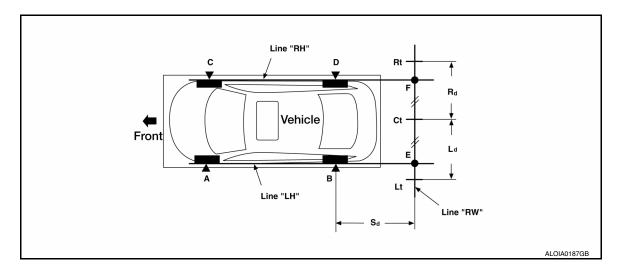
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#### **CAUTION:**

- 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.

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

- 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.

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:

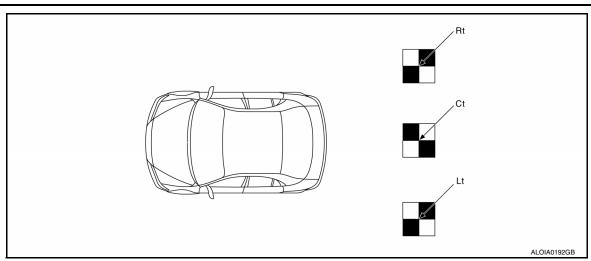
#### Make sure that "E" to "Ct" is equal to "F" to "Ct".

- 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".

String Wheel center Cone Mark a point PKIB7667E

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**DAS-183** Revision: November 2013 2014 Altima NAM Р



### **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-184, "Work Procedure (Rear View Camera Calibration)".

Work Procedure (Rear View Camera Calibration)

INFOID:000000000946482

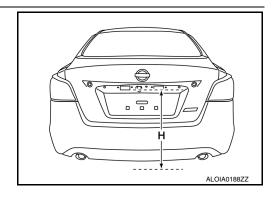
#### **CAUTION:**

Perform the calibration under the specified vehicle condition (fuel full, no-load, specified tire pressure, etc.). Refer to <u>DAS-182</u>, "Work <u>Procedure (Preparation)"</u>.

1. CHECK REAR VIEW CAMERA HEIGHT

Measure the rear view camera height "H".

>> GO TO 2.



# $2.\mathsf{REAR}$ VIEW CAMERA CALIBRATION

- 1. Select "Work Support" on "AVM" with CONSULT.
- 2. Select "REAR CAMERA ITS".
- 3. Select "OK".

### **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.
- 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.
- 8. Confirm the displayed item.
- "Completed": Select "Completion".
- Otherwise, perform the following services:

## **REAR VIEW CAMERA CALIBRATION**

< BASIC INSPECTION > [BSW]

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 activated	Rear view camera unit malfunction.	Position the target appropriately 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-183</u> , "Work Procedure (Target Setting)".	
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 appropriately again. Perform	
ABNORMALLY COM- PLETED	mappropriate work environment.		the aiming again. Refer to <u>DAS-182</u> , "Work Pro- cedure (Preparation)".	

#### 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 <u>DAS-164</u>, "DTC Index".

NO >> GO TO 4.

## 4.ACTION TEST

Test the system operation by action test. Refer to <a href="DAS-179">DAS-179</a>, "Description".

>> Work End.

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[BSW]

## 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.	ABS actuator and electric unit (control unit)     ITS 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 "C1A03" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".

## Is "C1A03" detected as the current malfunction?

YES >> Refer to <u>DAS-186</u>, "<u>Diagnosis Procedure</u>".

NO >> Refer to GI-43, "Intermittent Incident".

## Diagnosis Procedure

INFOID:0000000009464830

# 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-45, "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-128</u>, "Removal and Installation".
- NO >> Replace ITS control unit. Refer to <a href="DAS-68">DAS-68</a>, "Removal and Installation".

### C1A04 ABS/TCS/VDC SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[BSW]

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## C1A04 ABS/TCS/VDC SYSTEM

DTC Logic

### 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).	ABS actuator and electric unit (control unit)     ITS control unit

### DTC CONFIRMATION PROCEDURE

# 1. PERFORM DTC CONFIRMATION PROCEDURE

- 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 <u>DAS-187</u>, "<u>Diagnosis Procedure</u>".

NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000009464832

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-45, "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 <a href="BRC-128">BRC-128</a>, "Removal and Installation".

NO >> Replace ITS control unit. Refer to <a href="DAS-68">DAS-68</a>, "Removal and Installation".

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## C1A39 STEERING ANGLE SENSOR

DTC Logic

#### 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.	Steering angle sensor     ITS control unit

#### DTC CONFIRMATION PROCEDURE

# 1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition ON.
- 2. Perform "All DTC Reading" with CONSULT.
- 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 <u>DAS-188</u>, "<u>Diagnosis Procedure</u>".

NO >> Refer to GI-43, "Intermittent Incident".

## Diagnosis Procedure

INFOID:0000000009464834

# 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-45, "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. Is any DTC detected except for ITS?

YES >> Replace steering angle sensor. Refer to <u>BRC-132</u>, "Removal and Installation".

NO >> Replace ITS control unit. Refer to <a href="DAS-68">DAS-68</a>, "Removal and Installation".

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

< DTC/CIRCUIT DIAGNOSIS >

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INFOID:0000000009464836

## U0122 VDC P-RUN DIAG

DTC Logic

### 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 <u>DAS-189</u>, "<u>Diagnosis Procedure</u>".

NO >> Refer to GI-43, "Intermittent Incident".

## Diagnosis Procedure

 $1.\mathsf{check}$  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-128, "Removal and Installation"</u>.

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Revision: November 2013 DAS-189 2014 Altima NAM

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## U0416 VDC CHECKSUM DIAG

DTC Logic

#### 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.
- 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 <u>DAS-190</u>, "<u>Diagnosis Procedure</u>".

NO >> Refer to GI-43, "Intermittent Incident".

## Diagnosis Procedure

INFOID:0000000009464838

# 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-128</u>, "Removal and Installation".

## **U0428 STEERING ANGLE SENSOR**

< DTC/CIRCUIT DIAGNOSIS >

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## **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.

## **Diagnosis Procedure**

INFOID:0000000009464840

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 <a href="BRC-33">BRC-33</a>, "CON-SULT Function (ABS)".

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## U1000 CAN COMM CIRCUIT

Description INFOID:000000009464841

#### 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

### 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 communication signal for 2 seconds or more	CAN communication system     ITS communication system

#### NOTE:

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

## Diagnosis Procedure

INFOID:0000000009464843

# 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-192</u>, "<u>Description</u>".

NO >> Refer to GI-43, "Intermittent Incident".

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

### < DTC/CIRCUIT DIAGNOSIS >

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## U1010 CONTROL UNIT (CAN)

Description INFOID:000000009464844

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
U1010	CONTROL UNIT (CAN)	If ITS control unit detects malfunction by CAN controller initial diagnosis	ITS control unit

## Diagnosis Procedure

INFOID:0000000009464846

# 1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn the MAIN switch of ITS system ON.
- 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-68</u>, "Removal and Installation".

NO >> Inspection End.

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

< DTC/CIRCUIT DIAGNOSIS >

[BSW]

## U111A REAR CAMERA IMAGE SIGNAL CIRCUIT

DTC Logic

### 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:0000000009464848

Regarding Wiring Diagram information, refer to DAS-166, "Wiring Diagram".

# 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	ITS control unit		Camera	Continuity
Connector	Terminal	Connector	Terminal	Continuity
M59	51	P35		Yes
IVIJ	M59 B35		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

- Connect the ITS control unit connector and rear camera connector.
- 2. Turn the ignition switch ON.
- Check voltage between ITS control unit harness connector and ground.

Terminal					
(+) ITS control unit		(+)		Voltage	
		(–)	Condition	(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 <a href="DAS-68">DAS-68</a>, "Removal and Installation".

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

### < DTC/CIRCUIT DIAGNOSIS >

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# 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	ITS control unit		w Camera	Continuity
Connector	Terminal	Connector	Terminal	Continuity
M59	M50		1	Yes
WIJS	66	B35	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
IVIOS	66		140

### Is inspection result normal?

YES >> GO TO 4.

NO >> Repair harness or connector.

## f 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.

	Terr	minal			
(	(+) (-)		Condition	Voltage	
	ITS cor	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 -40 μs ALOIA0179ZZ

### Is inspection result normal?

YES >> Replace ITS control unit. Refer to <u>DAS-68</u>, "Removal and Installation".

NO >> Replace rear view camera. Refer to <u>DAS-219</u>, "Removal and Installation".

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Revision: November 2013 DAS-195 2014 Altima NAM

## **U1232 STEERING ANGLE SENSOR**

< DTC/CIRCUIT DIAGNOSIS >

[BSW]

## U1232 STEERING ANGLE SENSOR

DTC Logic

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.	Steering angle sensor     ITS control unit

## Diagnosis Procedure

INFOID:0000000009464850

# 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-158</u>, "CONSULT <u>Function (AVM)"</u>.
- 3. Check "Self Diagnostic Result" of "AVM" with CONSULT. Refer to <u>DAS-158</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 <a href="DAS-68">DAS-68</a>, "Removal and Installation".

NO >> Repair or replace malfunctioning parts.

## **U1305 CAMERA IMAGE CALIB**

< DTC/CIRCUIT DIAGNOSIS >

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## U1305 CAMERA IMAGE CALIB

DTC Logic

### 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:0000000009464852

# 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-158</u>, "<u>CONSULT Function (AVM)</u>". If problem persists, repair or replace the malfunctioning part.

NO >> Refer to GI-43, "Intermittent Incident".

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## **U1308 CAMERA CONFIG**

< DTC/CIRCUIT DIAGNOSIS >

[BSW]

## **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:0000000009464854

# 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-158, "CONSULT Function (AVM)"</u>.

NO >> Refer to GI-43, "Intermittent Incident".

### **U1309 PUMP UNIT CURRENT**

< DTC/CIRCUIT DIAGNOSIS >

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INFOID:0000000009464856

## U1309 PUMP UNIT CURRENT

**DTC Logic** INFOID:0000000009464855

### 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	Rear view camera washer control unit     Harness     ITS control unit

#### DTC CONFIRMATION PROCEDURE

# 1. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON.
- Perform "All DTC Reading" with CONSULT. 2.
- Check if the "U1309" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".

## Is "U1309" detected as the current malfunction?

>> Refer to DAS-199, "Diagnosis Procedure". YES

NO >> Inspection End.

## Diagnosis Procedure

Regarding Wiring Diagram information, refer to DAS-166, "Wiring Diagram".

# $1.\mathsf{check}$ rear view camera air pump motor power supply circuit

- Disconnect the rear view camera washer control unit connector.
- 2. Turn the ignition switch ON.
- Check voltage between rear view camera washer control unit connector and ground.

Terminal				
(+)				Voltage (Approx.)
	Rear view camera washer control unit		Condition	
Connector	Terminal			
B16	12	Ground	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

Turn the ignition switch OFF.

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

Disconnect the ITS control unit connector.

**DAS-199** Revision: November 2013 2014 Altima NAM

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## **U1309 PUMP UNIT CURRENT**

### < DTC/CIRCUIT DIAGNOSIS >

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

ITS cor	ITS control unit		mera washer	Continuity
Connector	Terminal	Connector Terminal		
M58	2	B16	7	Yes
IVIOO	3	БЮ	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	Giodila	No
OCIVI	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	Terminal	Connector Terminal		
B16	1	B17	1	Yes
ь10	2	БП	2	165

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	Giodila	No
D10	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.

## 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.
- 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 >

[BSW]

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 <u>DAS-68</u>, "Removal and Installation".

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### **U130B REAR CAMERA COMM ERROR**

< DTC/CIRCUIT DIAGNOSIS >

[BSW]

## U130B REAR CAMERA COMM ERROR

DTC Logic

### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U130B	REAR CAMERA COMM ERROR	ITS control unit receives the incorrect communication signal from rear view camera.	Rear view camera     Harness     ITS control unit

### DTC CONFIRMATION PROCEDURE

# 1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- 2. Perform "All DTC Reading" with CONSULT.
- 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 <u>DAS-202</u>, "<u>Diagnosis Procedure</u>".

NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000009464858

Regarding Wiring Diagram information, refer to DAS-166, "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.
- Check voltage between ITS control unit connector M59 and ground.

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

## Is the inspection result normal?

YES >> Replace the ITS control unit. Refer to <a href="DAS-68">DAS-68</a>, "Removal and Installation".

NO >> Replace rear view camera. Refer to <u>DAS-219</u>, "Removal and Installation".

< DTC/CIRCUIT DIAGNOSIS >

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INFOID:0000000009464860

## U1310 PUMP UNIT CIRCUIT

DTC Logic

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	Rear view camera washer control unit     Harness     ITS control unit

### 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 <u>DAS-203</u>, "<u>Diagnosis Procedure</u>".

NO >> Inspection End.

Diagnosis Procedure

Regarding Wiring Diagram information, refer to DAS-166, "Wiring Diagram".

# 1. CHECK REAR VIEW CAMERA AIR PUMP MOTOR POWER SUPPLY CIRCUIT

- Disconnect the rear view camera washer control unit connector.
- 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	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

Disconnect the ITS control unit connector.

Revision: November 2013 DAS-203 2014 Altima NAM

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## **U1310 PUMP UNIT CIRCUIT**

## < DTC/CIRCUIT DIAGNOSIS >

[BSW]

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	Terminal	Connector Terminal		
M58	2	B16	7	Yes
IVIOO	3	БЮ	8	165

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

ITS cor	ITS control unit		Continuity
Connector	Terminal	Ground	Continuity
M58	2	Giodila	No
OCIVI	3		INO

### 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
ь10	2	БП	2	165

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
ью	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.

## 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 >

[BSW]

	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 <u>DAS-68</u>, "Removal and Installation".

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### POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[BSW]

## POWER SUPPLY AND GROUND CIRCUIT

## Diagnosis Procedure

INFOID:0000000009464861

Regarding Wiring Diagram information, refer to DAS-166, "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		switch		
	20	20 Ground 39	OFF	Battery voltage	
M58			ON	Battery voltage	
WOO	30		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	Connector Terminal		Continuity
M58	40		Yes

### Is the inspection result normal?

YES >> Inspection End.

NO >> Repair the ITS control unit ground circuit.

## WARNING SYSTEMS SWITCH CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

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## WARNING SYSTEMS SWITCH CIRCUIT

## Component Function Check

## INFOID:000000009464862

# 1. CHECK WARNING SYSTEMS SWITCH INPUT SIGNAL

- Turn the ignition switch ON.
- Select the DATA MONITOR item "ITS SW 1" of "AVM" with CONSULT. 2.
- With operating the warning systems switch, check the monitor status.

Monitor item	Condition	Monitor status
ITS SW 1	Warning systems switch is pressed	On
	Warning systems switch is not pressed	OFF

### Is the inspection result normal?

YES >> Warning systems switch circuit is normal.

>> Refer to DAS-207, "Diagnosis Procedure". NO

## Diagnosis Procedure

INFOID:0000000009464863

Regarding Wiring Diagram information, refer to <a href="DAS-166">DAS-166</a>, "Wiring Diagram".

# 1. CHECK WARNING SYSTEMS SWITCH SIGNAL INPUT

- Turn the ignition switch ON.
- Check voltage between ITS control unit harness connector and ground.

	Terminals	Condition		
(+) (-)			Condition	Voltage
ITS control unit			Warning	(Approx.)
Connector	Terminal	Ground	systems switch	
M58 32			Pressed	0 V
IVIOO	10130 32		Released	12 V

## Is the inspection result normal?

>> Replace the ITS control unit. Refer to DAS-68, "Removal and Installation".

NO >> GO TO 2.

## 2.CHECK WARNING SYSTEMS SWITCH

- Turn ignition switch OFF.
- Remove warning systems switch.
- Check warning systems switch. Refer to <a href="DAS-208">DAS-208</a>, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace the warning systems switch. Refer to DAS-217, "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	Connector Terminal		Continuity	
M62	8		Yes	

#### Is the inspection result normal?

YES >> GO TO 4.

> **DAS-207** Revision: November 2013 2014 Altima NAM

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## **WARNING SYSTEMS SWITCH CIRCUIT**

### < DTC/CIRCUIT DIAGNOSIS >

[BSW]

NO >> Repair harness or connector.

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

- 1. Disconnect the ITS control unit connector.
- 2. 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-68, "Removal and Installation".

NO >> Repair the harnesses or connectors.

## Component Inspection

INFOID:0000000009464864

## 1. CHECK WARNING SYSTEMS SWITCH

Check continuity of warning systems switch.

Terr	minal	Condition	Continuity
6	6 0	When warning systems switch is pressed	Yes
O		When warning systems switch is released	No

### Is the inspection result normal?

YES >> Inspection End.

NO >> Replace the warning systems switch. Refer to DAS-217, "Removal and Installation".

### WARNING SYSTEMS ON INDICATOR CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[BSW]

## WARNING SYSTEMS ON INDICATOR CIRCUIT

## Component Function Check

## INFOID:000000009464865

- 1. CHECK WARNING SYSTEMS ON INDICATOR
- Turn the ignition switch ON.
- Select the active test item "BSW ON INDICATOR" of "AVM" with CONSULT. 2.
- With operating the test item, check the operation.

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: Warning systems ON indicator illuminates On : Warning systems ON indicator is turned OFF

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### Is the inspection result normal?

YES >> Inspection End.

>> Refer to <u>DAS-209</u>, "<u>Diagnosis Procedure</u>". NO

## Diagnosis Procedure

INFOID:0000000009464866

Regarding Wiring Diagram information, refer to <a href="DAS-166">DAS-166</a>, "Wiring Diagram".

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# 1. CHECK WARNING ON INDICATOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect warning system switch connector.
- Turn ignition switch ON. 3.
- 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

- Turn ignition switch OFF.
- Disconnect the ITS control unit harness connector. 2.
- Check continuity between the ITS control unit harness connector and warning system switch harness connector.

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ITS cor	ntrol unit	Warning system switch		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.

3.CHECK WARNING SYSTEMS ON INDICATOR SIGNAL CIRCUIT FOR SHORT

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

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### WARNING SYSTEMS ON INDICATOR CIRCUIT

### < DTC/CIRCUIT DIAGNOSIS >

[BSW]

ITS control unit			Continuity	
Connector	Terminal	Ground	Continuity	
M58	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-210, "Component Inspection".

### Is the inspection result normal?

YES >> Replace the ITS control unit. Refer to <a href="DAS-68">DAS-68</a>, "Removal and Installation".

NO >> Replace warning systems switch. <u>DAS-217</u>, "Removal and Installation".

## Component Inspection

INFOID:0000000009464867

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

#### Is the inspection result normal?

YES >> Inspection End.

NO >> Replace the warning systems switch. Refer to <a href="DAS-217">DAS-217</a>, "Removal and Installation".

WARNING BUZZER CIRCUIT		
< DTC/CIRCUIT DIAGNOSIS >	[BSW]	
WARNING BUZZER CIRCUIT		
Component Function Check	INFOID:000000009464868	
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.		
s the inspection result normal?		
YES >> Inspection End. NO >> Refer to <u>DAS-211, "Diagnosis Procedure"</u> .		
Diagnosis Procedure	INFOID:0000000009464869	
.CHECK WARNING BUZZER OPERATION		
While activating the buzzer with CONSULT, listen for the buzzer sound.		
Ooes warning buzzer sound?		
YES >> Replace the ITS control unit. Refer to <u>DAS-68</u> , "Removal and Installation".  NO >> Replace the combination meter (buzzer).		
NO >> Replace the combination meter (buzzer).		

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# SYMPTOM DIAGNOSIS

# **BSW 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 for operating conditions of the Blind Spot Warning system.

• Blind Spot Warning system: <u>DAS-152</u>, "System Description".

Sympt	om	Possible cause	Inspection item/Reference page	
	Blind Spot Warning lamp (orange) 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>	ITS control unit Active test "BSW WARNING LAMP". Refer to DAS-158, "CONSULT Function (AVM)". ITS control unit Data monitor "BSW WARN LMP".	
Indicator/warning lamps do not illuminate when ignition switch OFF ⇒ ON.	Blind Spot Warning/Backup Collision Warning lamp (or- ange) do not illuminate	Combination meter     ITS control unit	Refer to <u>DAS-158</u> , "CONSULT <u>Function (AVM)"</u> .  • Combination meter Data monitor "BSW W/L". Refer to <u>MWI-18</u> , "CONSULT <u>Function (METER/M&amp;A)"</u> .	
	All of indicator/warning lamps do not illuminate;     Blind Spot Warning lamp     Warning systems ON indicator	<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-206</u> , " <u>Diagnosis Procedure</u> ".	
	Warning systems ON indicator (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-209</u> , " <u>Diagnosis 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-158, "CONSULT Function (AVM)".	
BSW system is not activated. (Indicator/warning lamps illuminate when ignition switch OFF $\Rightarrow$ ON.)	Warning systems ON indicator is not turned ON ⇔ OFF when operating warning systems 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>	Warning systems switch circuit. Refer to DAS-207, "Diagnosis Procedure".     BSW system setting cannot be turned ON/OFF on the navigation screen. Refer to DAS-215, "Description".	
	Buzzer is not sounding	Combination meter (warning buzzer)     ITS control unit	Combination meter. Refer to DAS-211, "Component Function Check".	
Blind Spot Warning functions are ((Example))  Does not function when approahicle in the blind spot.  Functions when driving in the management of the process of the proces	ching a lane marker with a ve-	Camera aiming     Lane camera unit	Camera aiming. Refer to DAS-182, "Description".	

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

[BSW] < SYMPTOM DIAGNOSIS > SWITCH DOES NOT TURN ON / SWITCH DOES NOT TURN OFF Description INFOID:0000000009464871

The switch does not turn ON

 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.

The switch does not turn OFF

 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.

## Diagnosis Procedure

# ${f 1}.$ CHECK BLIND SPOT WARNING SYSTEM SETTING

- Start the engine.
- 2. After starting the engine wait for 5 seconds or more.
- Check that Blind Spot Warning system setting on the vehicle information display screen is ON.

## Is Blind Spot Warning system setting ON?

YES >> GO TO 2.

NO >> Enable the Blind Spot Warning system setting.

# 2.WARNING SYSTEM SWITCH INSPECTION

- Start the engine. 1.
- Check that warning system switch operates normally in "DATA MONITOR" of "AVM" with CONSULT.

### Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 5.

# 3.check blind spot warning on indicator circuit

- Start the engine.
- 2. Select the active test item "BSW ON IND" of "AVM" with CONSULT.
- Check if the Blind Spot Warning ON indicator illuminates when the test item is operated.

#### Is the inspection result normal?

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

## $oldsymbol{4}$ . PERFORM THE SELF-DIAGNOSIS OF COMBINATION METER

Perform "All DTC Reading" with CONSULT.

Check if the DTC is detected in self-diagnosis results of "METER/M&A". Refer to MWI-27, "DTC Index".

#### Is the inspection result normal?

>> GO TO 6. YES

NO >> GO TO 5.

## ${f 5.}$ PERFORM THE SELF-DIAGNOSIS

- Perform "All DTC Reading" with CONSULT.
- Check if the DTC is detected in self-diagnosis results of "AVM". Refer to DAS-164, "DTC Index".

### Is any DTC detected?

YES >> GO TO 6.

NO >> GO TO 7.

## O. REPAIR OR REPLACE MALFUNCTIONING PARTS.

Repair or replace malfunctioning parts.

>> GO TO 7.

Revision: November 2013

## 7.CHECK BLIND SPOT WARNING SYSTEM

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

< SYMPTOM DIAGNOSIS >

[BSW]

1. Erase "self-diagnosis result", and then perform "All DTC Reading" again after performing the action test. (Refer to <u>DAS-179</u>, "<u>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-

FORMATION DISPLAY

- BSW system setting is not selectable on the vehicle information display screen.
- NOTE:

Description

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.
- 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.

## Diagnosis Procedure

1. CHECK BLIND SPOT WARNING SYSTEM SETTING

- Start the engine.
- Check that the Blind Spot Warning 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

- 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: DAS-164, "DTC Index"
- MULTI AV (with BOSE): AV-328, "DTC Index"
- MULTI AV (without BOSE): AV-231, "DTC Index"
- METER/M&A: MWI-27, "DTC Index"

#### Is any DTC detected?

YES >> Repair or replace malfunctioning parts.

NO >> Inspection End.

## 3.CHECK DATA MONITOR OF ITS CONTROL UNIT

Check that "BSW SELECT" operates normally in "DATA MONITOR" of "AVM" with CONSULT.

### Is the inspection result normal?

YES >> Refer to DAS-158. "CONSULT Function (AVM)".

NO >> GO TO 4.

### f 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-68, "Removal and Installation".

NO >> Repair or replace malfunctioning parts. DAS

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**DAS-215** Revision: November 2013 2014 Altima NAM

[BSW]

## NORMAL OPERATING CONDITION

Description INFOID:000000009464875

## 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.

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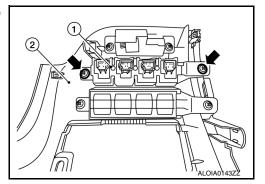
# REMOVAL AND INSTALLATION

# WARNING SYSTEMS SWITCH

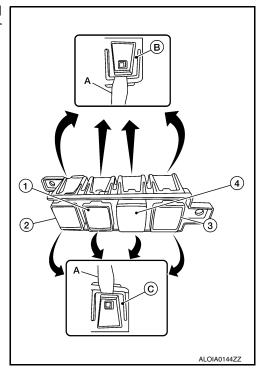
#### Removal and Installation

#### **REMOVAL**

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



- 3. 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**

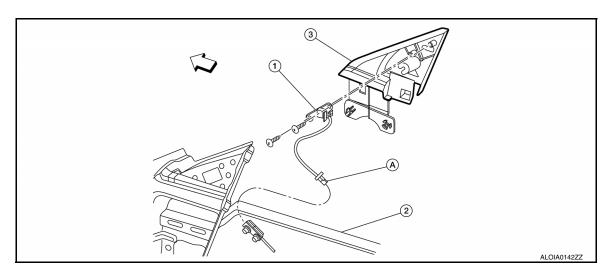
Installation is in the reverse order of removal.

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# **BSW INDICATOR**

Exploded View



- 1. Blind spot warning indicator
- 2. Front door
- 3. Door mirror corner finisher
- A. Blind spot warning indicator harness connector 🗢 Front

#### NOTE:

LH side shown; RH side similar.

## Removal and Installation

INFOID:0000000009464880

#### REMOVAL AND INSTALLATION

#### Removal

- 1. Remove the front door finisher. Refer to MIR-20, "Removal and Installation".
- 2. Remove the door mirror corner finisher using a suitable tool.
- 3. Remove the blind spot warning indicator screws.
- 4. Remove the blind spot warning indicator.

#### Installation

Installation is in the reverse order of removal.

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# **REAR VIEW CAMERA**

**Exploded View** 

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- 1. Rear view camera washer control unit
- 2. Rear view camera air pump motor
- 3. Rear view camera

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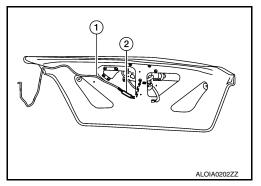
4. Trunk lid

## Removal and Installation

**REMOVAL** 

1. Remove rear view camera air pump motor. Refer to <a href="DAS-145">DAS-145</a>, "Removal and Installation".

2. Disconnect the rear washer tube (1) from rear view camera (2).



3. Disconnect the harness connector from the rear view camera and remove.

#### **INSTALLATION**

Installation is in the reverse order of removal.

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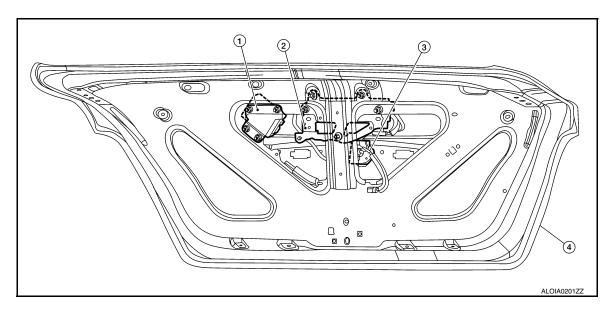
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# REAR VIEW CAMERA WASHER CONTROL UNIT

Exploded View



- 1. Rear view camera washer control unit
- 2. Rear view camera air pump motor
- 3. Rear view camera

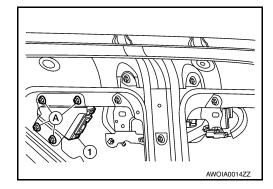
4. Trunk lid

#### Removal and Installation

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#### **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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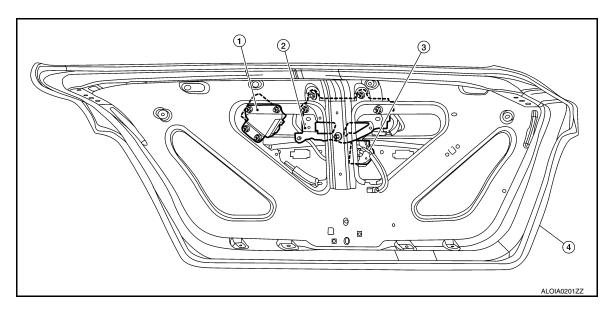
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## REAR VIEW CAMERA AIR PUMP MOTOR

Exploded View



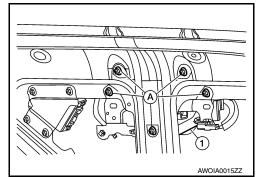
- 1. Rear view camera washer control unit
- . Rear view camera air pump motor
- 3. Rear view camera

4. Trunk lid

**REMOVAL** 

#### Removal and Installation

- 1. Remove the trunk lid finisher. Refer to INT-33, "TRUNK LID FINISHER: Removal and Installation".
- 2. Disconnect the air tubes 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 (1).



#### **INSTALLATION**

Installation is in the reverse order of removal.

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< PRECAUTION > [MOD]

# **PRECAUTION**

### **PRECAUTIONS**

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

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

#### **WARNING:**

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

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

#### **WARNING:**

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

Precaution for 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.

INFOID:0000000009464886

- 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.

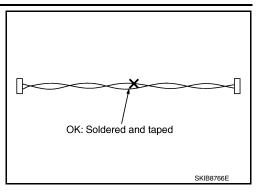
Revision: November 2013 DAS-222 2014 Altima NAM

#### **PRECAUTIONS**

< PRECAUTION > [MOD]

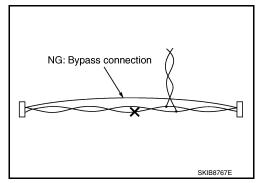
Solder the repaired area and wrap tape around the soldered area.
 NOTE:

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 > [MOD]

# **PREPARATION**

# **PREPARATION**

Special Service Tool		INFOID:000000009464887
The actual shapes of the tools may	y differ from those illustrated here.	
Tool number (TechMate No.) Tool name		Description
— (J-46534) Trim Tool Set	AWJIA0483ZZ	Removing trim components

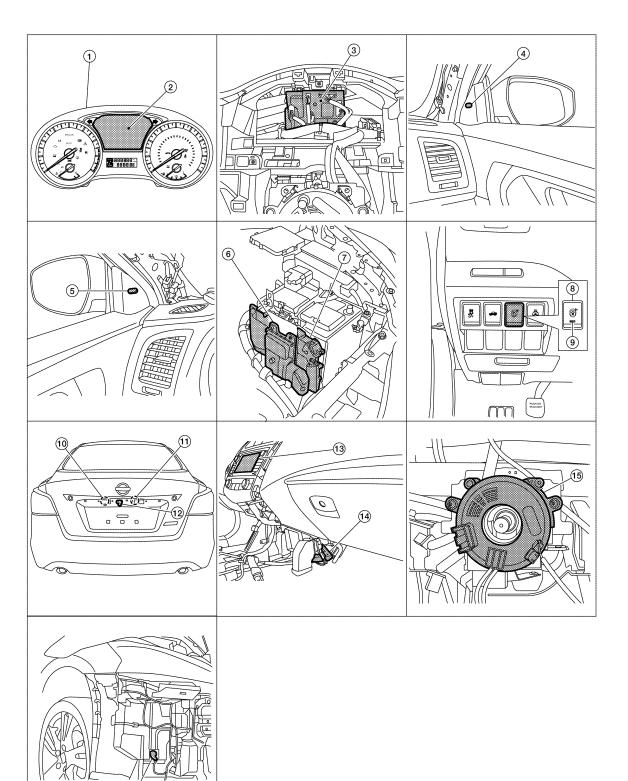
# [MOD]

INFOID:0000000009464888

# SYSTEM DESCRIPTION

# **COMPONENT PARTS**

**Component Parts Location** 



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- 1. Combination meter
- Blind spot warning indicator RH
- 7. **ECM**
- 10. Rear view camera washer control unit
- 13. AV control unit (center display) (with navi- 14. ITS control unit gation system and bose audio system) Audio unit (center display) (with display audio system and bose audio system)
- 16. Washer fluid level switch (view with front fascia removed)

- 2. Vehicle information display
- 5. Blind spot warning indicator LH
- 8. Warning systems switch
- 11. Rear view camera air pump motor
- (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 Description

INFOID:0000000009464889

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	Detects the lane marker by the built-in camera     Transmits detected lane condition signal to ITS control unit	
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	
TCM	Transmits the output shaft speed signal, input speed signal, current gear position signal and shift position signal to ITS control unit via CAN communication	
Center display	Displays the various system screen signals according to the priority level received via CAN communication	
AV control unit (with navigation system and bose audio system)	Receives the various systems and camera signals via CAN communication and routes them to the center display	
Audio unit (with display audio system and bose audio system)	Receives the various systems and camera signals and routes them to the center display	
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	

# **COMPONENT PARTS**

## < SYSTEM DESCRIPTION >

[MOD]

Component	Description
Rear view camera air pump motor	Drives air to the rear camera lens according to the signals received from the pump control unit
Washer fluid level switch	Transmits the washer fluid level switch signal to the ITS control unit

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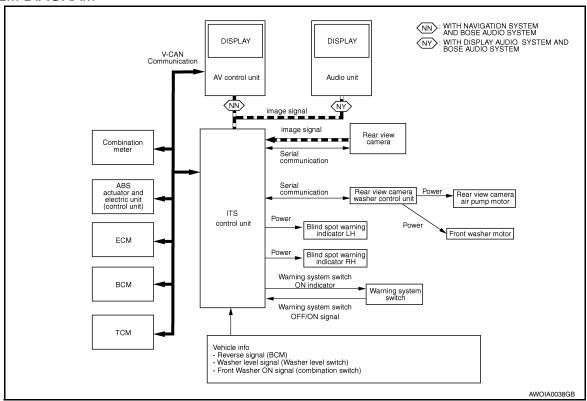
[MOD]

# **SYSTEM**

# **System Description**

INFOID:0000000009464890

### SYSTEM DIAGRAM



#### ITS CONTROL UNIT INPUT/OUTPUT SIGNAL ITEM

#### Input Signal Item

Transmit unit	Signal name		Description
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
ABS actuator and electric unit (control unit)	CAN communication	Wheel speed signal	Receives wheel speed
TCM	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
Rear view cam- era	NTSC	Video signal	Receives the Rear View Camera image from camera for Moving Object Detection function in ITS controller

**Output Signal Item** 

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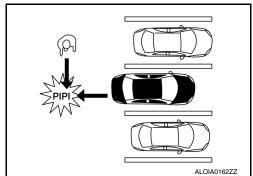
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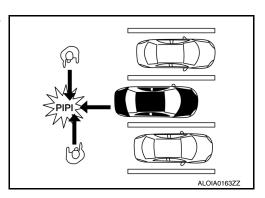
Reception unit	Signal name		Description
Combination meter	CAN communication	Buzzer Request	Transmits a buzzer request signal when a moving object is detected.
Display	CAN communication	Visual signal request	Transmits a visual signal request from the ITS controller to display Rear View while the shift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

#### **FUNCTION DESCRIPTION**

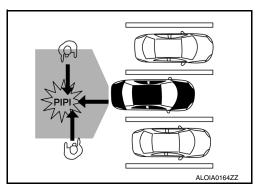
- The Moving Object Detection (MOD) system can help alert the driver of approaching vehicles or rear objects when the driver is backing out of a parking space.
- The MOD system comprises of the rear view camera as the main detection system, which is located on the trunk as illustrated.
- The MOD system 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.

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Revision: November 2013 DAS-229 2014 Altima NAM

### **SYSTEM**

#### < SYSTEM DESCRIPTION >

[MOD]

- Moving Object Detection braking will not operate or will stop operating and only a warning chime will sound under the following conditions:
- When driving with a tire that is not within normal tire conditions (pressure, wear, chain, spare, etc.)
- When the vehicle is equipped with non-original brake parts or suspension parts.
- Do not use the MOD system when towing a trailer.
- Excessive noise such as the audio system will interfere with the chime sound, and it may not be heard.

#### **OPERATION**

< SYSTEM DESCRIPTION > [MOD]

# **OPERATION**

# System Display and Warning

#### INFOID:0000000009464891

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#### 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)	Turns ON while MOD system is ON Under the following conditions, the MOD indicator (blue) will blink. When the VDC system (except TCS function) or ABS operates. When the VDC system is turned off.
ļ	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			
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 approx. 8 km/h ( 5 MPH)	Vehicle is detected	ON	ON	
Blue Approx. 8 km/h ( 5 MPH) or more	Vehicle is absent	ON	OFF		
	Vehicle is detected	ON	OFF		
		Vehicle is not detected	ON	OFF	

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Revision: November 2013 DAS-231 2014 Altima NAM

#### HANDLING PRECAUTION

< SYSTEM DESCRIPTION >

[MOD]

#### HANDLING PRECAUTION

## **Precautions for Moving Objects Detection**

INFOID:0000000009464892

#### 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 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.

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

< SYSTEM DESCRIPTION >

[MOD]

# DIAGNOSIS SYSTEM (ITS CONTROL UNIT)

# **CONSULT Function (AVM)**

INFOID:0000000009951658

#### **CAUTION:**

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

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#### APPLICATION ITEMS

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

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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

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#### SELF DIAGNOSTIC RESULT

Refer to DAS-239, "DTC Index".

Monitored item

DATA MONITOR

PUMP COMM STATUS

[OK/NG]

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 actuator 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

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Indicates the state of the communication signal from pump control unit

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

#### < SYSTEM DESCRIPTION >

[MOD]

Monitored item [Unit]	Description
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
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
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

### **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	
LED LH INDICATOR	ON	Flashes the left side LED light for ITS system	
	OFF	Trasties the left side LLD light for 113 system	
LED RH INDICATOR	ON	Flashes the right side LED light for ITS system	
	OFF		
AIR ACTIVE	ON	Activates the air pump to clean the lens of rear camera	
	OFF	Activates the air pump to clean the lens of real camera	
AIR & WASH ACTIVE	ON	Activates the air pump and washer to clean the lens of rear camera	
	OFF	Activates the air pump and washer to clean the lens of fear camera	

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

### < SYSTEM DESCRIPTION >

[MOD]

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
	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
, bab	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.

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# **ECU DIAGNOSIS INFORMATION**

# ITS CONTROL UNIT

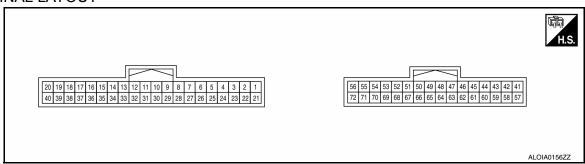
Reference Value

### VALUES ON THE DIAGNOSIS TOOL

Monitor item		Condition	Value/Status
ST ANGLE SENSOR	Ignition switch ON	Steering angle signal is received	On
SIGNAL	Igrillion switch ON	Steering angle signal is not received	Off
REVERSE SIGNAL	Ignition quitab ON	Shift selector in R (reverse)	On
REVERSE SIGNAL	Ignition switch ON	Shift selector is not in R (reverse)	Off
VEHICLE SPEED	\\/\bile driving	Vehicle speed signal is received	On
SIGNAL	While driving	Vehicle speed signal is not received	Off
CAMERA SWITCH	Ignition quitab ON	Camera switch is pressed	On
SIGNAL	Ignition switch ON	Camera switch is not pressed	Off
CAMERA OFF SIG-	Invition switch ON	Purpose switch is pressed	On
NAL	Ignition switch ON	Purpose switch is not pressed	Off
ST ANGLE SENSOR	Ignition quitab ON	Steering angle sensor type is displayed	Absolute
TYPE Ignition switch ON		Steering angle sensor type is not received	Not
STEERING GEAR	Invition switch ON	Pattern 1 type of steering gear ratio displayed	Pattern 1
RATIO TYPE	Ignition switch ON	Pattern 2 type of steering gear ratio displayed	Pattern 2
STEERING POSI-	Ignition quitab ON	It recognizes steering position is left	LHD
TION	Ignition switch ON	It recognizes steering position is right	RHD
R-CAMERA COMM	Leaving and the ON	Rear camera serial status is OK	OK
STATUS	Ignition switch ON	Rear camera serial status is not OK	NG
R-CAMERA COMM	Leaving and the ON	Rear camera serial communication signal is received	OK
LINE	Ignition switch ON	Rear camera serial communication signal is not received	NG
11.1	Lawitian awitah ON	Illumination is ON	On
ILL	Ignition switch ON	Illumination is OFF	Off
ITO OW 4	Invition switch ON	ITS switch is pressed	On
ITS SW 1	Ignition switch ON	ITS switch is not pressed	Off
ITO OW 4 IND	Invition switch ON	Indicator of ITS switch 1 is lighting	On
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	N
		Turn signal right is received	Right
REAR CAMERA IM-		Camera image signal is received	On
AGE SIGNAL	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
N/A OLL ON/	1	Wash switch signal is pressed	On
WASH SW	Ignition switch ON	Wash switch signal is not pressed	Off
PUMP COMM STA-	Invalidade accidente CAL	Pump communication signal is received	On
TUS	Ignition switch ON	Pump communication signal is not received	Off

[MOD]

# 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	washer level switch	input	switch ON	When washer fluid is not low (switch open)	12 V
2 (G)	Ground	Washer signal pump to camera	Input	Ignition sw	itch ON	5 V
3 (W)	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 (P)	Ground	Serial ground	Output	_	_	0 V
27 (L)	Ground	CAN -H	_	_	_	_
28	Ground	Reverse	Input	Ignition	Shift selector in R (reverse)	12 V
(R)	Ground	Reverse	mput	switch ON	Shift selector not in R (reverse)	0 V
32	Ground	Cancel SW output	Input	Ignition	Cancel switch pressed	0 V
(P)	Ground	Cancel Svv Output	Input	switch ON	Cancel switch not pressed	12 V
33	Ground	LED input	Outout	Ignition	Warning system is ON	12 V
(BG)	Ground	LED input	Output	switch ON	Warning system is OFF	0 V
37	Ground	SOW LED cianal L	Outout	While	LDW/BSW detected	12 V
(W)	Ground	SOW LED signal L	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

Revision: November 2013 DAS-237 2014 Altima NAM

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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			
66 (B)	Ground	RR CAM COMP +	Input	Ignition switch ON	(V) 1 0 -1 -40 μs ALOIA0179ZZ			
68 (G)	Ground	RR CAM CONT	Input	Ignition switch ON	5 V			
69 (B)	Ground	RR CAM COMP +	Input	Ignition switch ON	(V) 1 0 -1 -40 µs ALOIA0179ZZ			

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		
Moving Object Detection (MOD)	Low-pitched tone	Warning lamp MOD icon (on camera screen)	Cancel		

# **DTC Inspection Priority Chart**

INFOID:0000000009951661

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	C1A39: STRG SEN CIR  U0428: STRG SEN CAN CIR 2  U1111A: REAR CAMERA IMAGE SIGNAL  U1232: ST ANGLE SEN CALIB  U1309: PUMP UNIT CURRENT  U130B: REAR CAMERA COMM ERROR  U1310: PUMP UNIT CIRCUIT
4	C1A03: VHCL SPEED SE CIRC C1A04: VDC FAIL U0122: VDC P-RUN DIAG U0416: VDC CHECKSUM DIAG

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DTC Index

#### 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  $0 \to 1 \to 2 \cdots 38 \to 39$  after returning to the normal condition whenever the ignition switch OFF  $\to$  ON. It returns to 0 when a malfunction is detected again in the process.
- If it is over 39, it is fixed to 39 until the self-diagnosis results are erased. Other than CAN communication system (Other than U1000, U1010)
- 1 49: It increases like 0 → 1 → 2 ··· 38 → 49 after returning to the normal condition whenever the ignition switch OFF → ON. It returns to 0 when a malfunction is detected again in the process.
- If it is over 49, it is fixed to 49 until the self-diagnosis results are erased.

Systems for fail-safe

- · A: Lane Departure Warning (LDW)
- · B: Blind Spot Warning (BSW)
- · C: Moving Object Detection (MOD)

DTC		1	Narning lam	пр	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-260
C1A04	VDC FAIL	ON	ON	ON	A, B, C	DAS-261
C1A39	STRG SEN CIR	ON	ON	ON	A, B, C	DAS-262
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-263
U0416	VDC CHECKSUM DIAG	ON	ON	ON	A, B, C	DAS-264
U0428	STRG SEN CAN CIR 2	ON	ON	ON	A, B, C	DAS-265
U1000 <sup>NOTE</sup>	CAN COMM CIRCUIT	ON	ON	ON	A, B, C	DAS-266
U1010	CONTROL UNIT (CAN)	ON	ON	ON	A, B, C	DAS-267
U111A	REAR CAMERA IMAGE SIGNAL	ON	ON	ON	A, B, C	DAS-268
U1232	ST ANGLE SEN CALIB	ON	ON	ON	A, B, C	DAS-270
U1305	CAMERA IMAGE CALIB	ON	ON	ON	A, B, C	DAS-271
U1308	CAMERA CONFIG	ON	ON	ON	A, B, C	DAS-272
U1309	PUMP UNIT CURRENT	ON	ON	ON	A, B, C	DAS-273
U130B	REAR CAMERA COMM ERROR	ON	ON	ON	A, B, C	DAS-276
U1310	PUMP UNIT CIRCUIT	ON	ON	ON	A, B, C	DAS-277

#### NOTE:

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

Revision: November 2013 DAS-239 2014 Altima NAM

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## ITS CONTROL UNIT



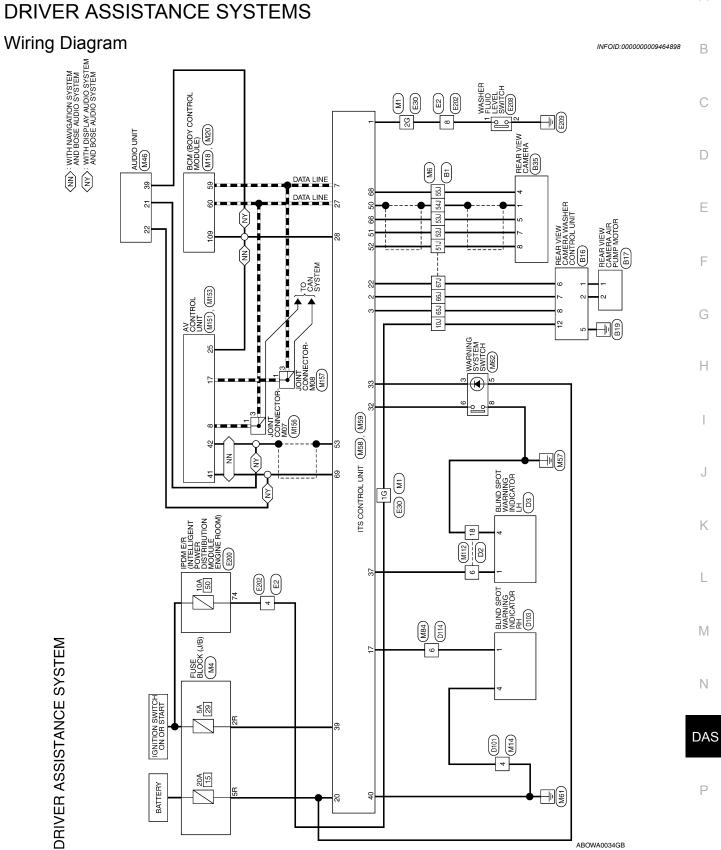
[MOD]

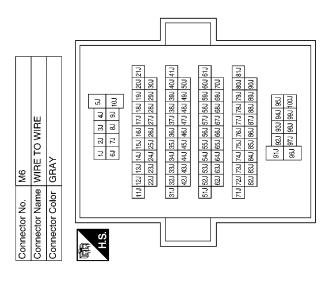
A system controlling based on a signal received from the control unit performs fail-safe operation when the communication with the ITS control unit becomes inoperable.

< WIRING DIAGRAM > [MOD]

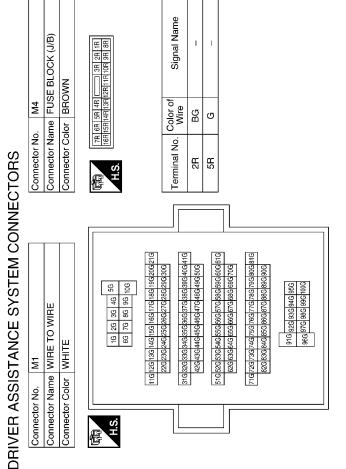
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# WIRING DIAGRAM





Signal Name	-	_	_	_	_	_	_	=	1
Color of Wire	LG	×	Œ	В	SHIELD	g	<b>%</b>	უ	Ь
Terminal No.	101	51J	52J	531	54J	55J	65J	P99	f29



Signal Name	ı	ı
Color of Wire	LG	BR
Terminal No.	16	2G

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	Connector Name   BCM (BODY CONTROL   MODULE)	\ \	16 115 114 113 112 111 110 109 100 107 106 105  28 127 126 126 124 123 122 121 120 119 118 117	Signal Name	REVERSE SIGNAL
M20	ne BCM (BOD MODULE)	or BLAC	51141131121	Color of Wire	ŋ
Connector No.	Connector Nan	Connector Color BLACK	(116 11 H.S. (128 2	Terminal No. Wire	109
M18	Connector Name BCM (BODY CONTROL MODULE)	LACK	57 56 55 54 58 52 51 50 49 48 47 46 45 44 43 42 41 47 78 78 78 78 78 77 77 78 78 78 78 78 78	of Signal Name	CAN-L
Connector No.	Connector Name B	Connector Color BLACK	H.S. (10 25) 58 57 56 55 54 53 52 51 50 73 77 75 75 77 77 77 77 77 77 77 77 77 77	Terminal No. Wire	59 P
	O WIRE		8 2 1	Signal Name	
. M14	Connector Name WIRE TO WIRE		2 to	Color of Wire	GR
Connector No.	nector Nar		H.S.	Terminal No. Wire	4

Signal Name   COMPOSITE +   REVERSE   COMPOSITE +   REVERSE   COMPOSITE +   REVERSE   COMPOSITE +   COMPOSITE +   COMPOSITE   COMPOSITE +   COMPOSITE   COMPOSITE +   COMPOSITE   COMPOS				35 36 51 52				
MA44	9	DIO UNIT (WITH DISPLAY DIO SYSTEM AND BOSE DIO SYSTEM)	ITE	26 27 28 29 30 31 32 33 34 42 48 48 49 50		COMPOSITE -	COMPOSITE +	REVERSE
22 23 38 39 39 38 38 38 38 38 38 38 38 38 38 38 38 38		me AUI		23 24 39 40	Color of Wire	SHIELD	В	ဗ
Connector Name Connector Color Connector Color Terminal No. W	Connector No	Connector Na	Connector Co	37		21	22	39

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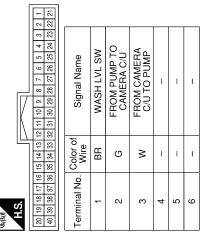
Signal Name	ı	ı	1	CAN-H	REV	1	ı	I	CANCEL SW OUTPUT	LED INPUT	I	1	ı	SOW LED SIGNAL L	1	IGN	GND
Color of Wire	1	-	_	٦	ш	1	1	1	Ъ	BG	-	-	_	Μ	1	BG	В
Terminal No.	24	25	56	27	28	29	30	31	32	33	34	35	36	37	38	39	40

Signal Name	_	-	_	ı	-	_	I	HR CAM COMP +	_	RR CAM CONT	+ LNO AWOO	ı	-	_
Color of Wire	Ι	ı	ı	ı	1	_	ı	В	-	ŋ	В	ı	ı	-
Terminal No.	29	09	61	62	63	64	65	99	29	89	69	70	71	72

																_	
Signal Name	CAN-L	-	1	ı	ı	1	ı	_	ı	ı	SOW LED SIGNAL R	1	_	B+	-	SERIAL GND	_
Color of Wire	۵	-	-	1	1	-	1	_	1	-	ŋ	1	-	ŋ	-	Ь	_
Terminal No.	7	8	6	10	#	12	13	14	15	16	17	18	19	20	21	22	23

	_	_	_	_		_		_	_			_	
Signal Name	ı	I	I	ı	I	RR CAM GND	RR CAM ON	I	Ι	I	I	I	I
Color of Wire	ı	ı	ı	ı	SHIELD	ш	≥	SHIELD	-	ı	-	ı	ı
Terminal No. Color of Wire	46	47	48	49	20	51	52	53	54	55	99	22	58

Connector No.	M58
onnector Name	Connector Name ITS CONTROL UNIT
Connector Color WHITE	WHITE



Connector Name ITS CONTROL UNIT  Connector Color WHITE  Se 56 54 58 52 51 50 49 48 47 46 45 44 43 42 41  TRANSPORTED	Connector No.	No.	M59	ြု												
50 49 48 47 46 45 44 43 42 66 65 64 63 62 61 60 59 58	Connector	Name	Ë	8	ΙŌ	늘	12	닏	15	l⊑						
S. (56 55 54 53 52 51 50 49 48 47 46 45 44 43 42 72 71 70 59 68 67 66 65 64 63 62 61 60 59 68	Connector	Color	≶	l₩	ш											
S. (56 56 54 53 52 51 50 49 48 47 46 45 44 43 42 (27) 77 70 69 68 67 66 65 64 63 62 61 60 59 58	<b>€</b>						<u> </u>	I 17	I II.	_				1		
55 54 53 52 51 50 49 48 47 46 45 44 43 42 77 10 69 68 67 66 65 64 63 62 61 60 59 58	NATION AND ADDRESS OF THE PARTY			Ш	ī	۱ ۱	Ì		Π	IJ		H	П	H	1	
72 71 70 89 68 67 66 65 64 83 82 61 60 59 58 57	ě	56 55 54	23	52	21	20	49	48	47	46	45	44	43	42	4	
	2	72 71 70	69	89	29	99	99	64	63	62	61	09	59	28	22	
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TO WIRE	3 4 5 6 7 8 9 10 11 12 15 16 17 18 19 20 21 22 23 24	Signal Name
M112 ame WIRE	1 2 3 4 5 13 14 15 16 17	Color of Wire W
Connector No. M112 Connector Name WIRE TO WIRE Connector Color WHITE	斯 H.S.	Cerminal No.
E TO WIRE	6 7 8 9 10 11 12 18 19 20 21 22 23 24	Signal Name
M84 MRE WIRE	13 14 15 16 17	Color of Wire
Connector No. M84  Connector Name WIRE TO WIRE  Connector Color WHITE	H.S.	Terminal No. Color of Wire 6 G
Connector No. M62 Connector Name WARNING SYSTEM SWITCH Connector Color GRAY	8 2 1	Signal Name
. M62 me WARN lor GRAY	4 8	Color of Wire BG BG BB
Connector No. M62 Connector Name WARN Connector Color GRAY	H.S.	Terminal No. 5 6 6 8

	Connector No.			Connector No. M156	). M156	(	-
OL UNIT (WITH IN SYSTEM WITH IO SYSTEM)	Connector Nan	AV C NAVI BOSE	AV CONTROL UNIT (WITH NAVIGATION SYSTEM WITH BOSE AUDIO SYSTEM)	Connector Name JOINT (	ame JOIN	Connector Name JOINT CONNECTOR-M07 Connector Color WHITE	
	Connector Color WHITE	or WHIT	Ë	4			
7 8 9 20	H.S.	21 22 23 24 33 34 35 36	21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 39 37 38 39 40 41 42 43 44	H.S.	3 2	2 1 D	
ignal Name	Terminal No. Wire	Color of Wire	Signal Name	Terminal No. Wire	Color of Wire	Signal Name	
	25	ŋ	REVERSE	-	_	I	
CAIN-H	41	Ф	CAMERA +	က	_	I	
CAIN-L	42	SHIELD	SHIELD CAMERA - (SHIELD)				

WHITE

Connector Name Connector Color

Connector No.

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Color of Wire

Terminal No.

Revision: November 2013 DAS-245 2014 Altima NAM

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					Connector No. E200		Connector Name   POWER DISTRIBUTION   MODULE ENGINE ROOM)	Connector Color WHITE	(京本)	Terminal No. Color of Wire Signal Name	74 BG WASH MTR (WITH REAR VIEW CAMERA)			
E TO WIRE	W   W   W   W   W   W   W   W   W   W	Signal Name	– (WITH REAR VIEW CAMERA)	ı	Signal Name	OVIET DEAD	– (WITH REAR VIEW CAMERA)	ı						
. E2 me WIRE T lor WHITE	- 4 2 0	Color of Wire	BG	œ	Color of Wire	D = >>	BG	æ						
Connector No. E2 Connector Name WIRE TO WIRE Connector Color WHITE	H.S.	Terminal No.	4	ω	Terminal No.		1G	2G						
								ſг						
Connector No. M157 Connector Name JOINT CONNECTOR-M08 Connector Color WHITE	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	Terminal No. Color of Wire Signal Name	Ф Ф		Connector No. E30		Connector Color WHITE		H.S. 10G 9G 8G 7G 6G	21G20G19G18G17G16G15G14G13G12G11G 30G29G2RG27G28G25G24G23G22G	41 0400 390 380 370 800 350 340 380 820 81 G 500 490 648 047 046 045 046 049 042 8	61 G 600G 50G 50G 50G 50G 50G 50G 50G 50G 50G	81 G80 G72	95G 94G 93G 92G 91G 100G 99G 98G 97G 96G

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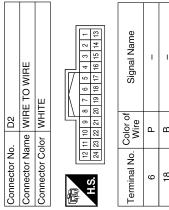
		Connector No.   B16
me WASHER FLUID LEVEL SWITCH lor BLACK	Color of Signal Name Wire B - B	Color of Wire Signal Name Wire W B - B B B B B B B B B B B - B B B B B B B B B B B - B B B B B B B B B B B - B B B B B B B B B B B - B B B B B B B B B B B - B B B B B B B B B B B - B B B B B B B B B B B - B B B B B B B B B B B - B B B B B B B B B B B - B B B B B B B B B B B - B B B B B B B B B B B - B B B B B B B B B B B - B B B B B B B B B B B - B B B B B B B B B B B - B B B B B B B B B B B - B B B B B B B B B B B - B
Connector No. Connector Color Connector Color	Terminal No.	Terminal No. (65) 553 653 653 6651 6673
Connector No. E202 Connector Name WIRE TO WIRE Connector Color WHITE    ST   ST   ST   ST   ST   ST   ST   S	Terminal No. Color of Signal Name 4 BG REAR VIEW CAMERA) 8 R	Connector No. B1  Connector Name WIRE TO WIRE  Connector Color GRAY  Sol 41 31 21 11  Sol 20 130 130 170 151 141 130 121 11  Sol 20 130 130 170 151 141 130 121 11  Sol 20 130 130 170 150 150 141 130 121 11  Sol 20 130 130 170 150 150 141 130 121 11  Sol 20 130 130 170 170 170 170 170 170 170 170 170 17

Revision: November 2013 DAS-247 2014 Altima NAM

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	WIRE TO WIRE	믵	8 7 6 5 4 3	0 19 18 17 16 15	Signal I	1	
DZ	e WIF	v WHITE	11 10 9	3 22 21 20	Color of Wire	₾	٥
Connector No.	Connector Name	Connector Color	12	24 23	Terminal No.	9	0

	REAR VIEW CAMERA	11	0 0 2	Signal Name	ı	ı	-	ı	ı
		or WHITE	4 8 7 3	Color of Wire	SHIELD	g	В	В	8
COLLINECTOR INC.	Connector Name	Connector Color	雨 H.S.	Ferminal No.	-	4	2	7	8

Connector No.	). B17	
Connector Name		REAR VIEW CAMERA AIR PUMP MOTOR
Connector Color WHITE	lor WH	ІТЕ
崎南 H.S.		
Terminal No. Wire	Color of Wire	Signal Name
1	۸	I
2	BR	ı

Connector No.	. D103	3
Connector Na	me BLII	Connector Name BLIND SPOT WARNING INDICATOR RH
Connector Color WHITE	lor WH	TE
南南 H.S.	4	
Terminal No.	Color of Wire	Signal Name
1	Я	_
4	В	-

Connector No. D101	Connector Name WIRE TO WIRE	Connector Color WHITE	3 7 8 5 4 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Terminal No. Color of Signal Name Wire	4 B –
Connect	Connect	Connect	H.S.	Termina	4

	Connector Name BLIND SPOT WARNING INDICATOR LH	11	32 1	Signal Name	I	I
. D3	me BLIN	lor WHI	4	Color of Wire	۵	В
Connector No.	Connector Na	Connector Color WHITE	原 H.S.	Terminal No. Wire	-	4

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## **DRIVER ASSISTANCE SYSTEMS**

< WIRING DIAGRAM > [MOD]

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Revision: November 2013

Connector Name WIRE TO WIRE

Connector No. D114

Connector Color WHITE

**DAS-249** 

Signal Name

Color of Wire

Terminal No.

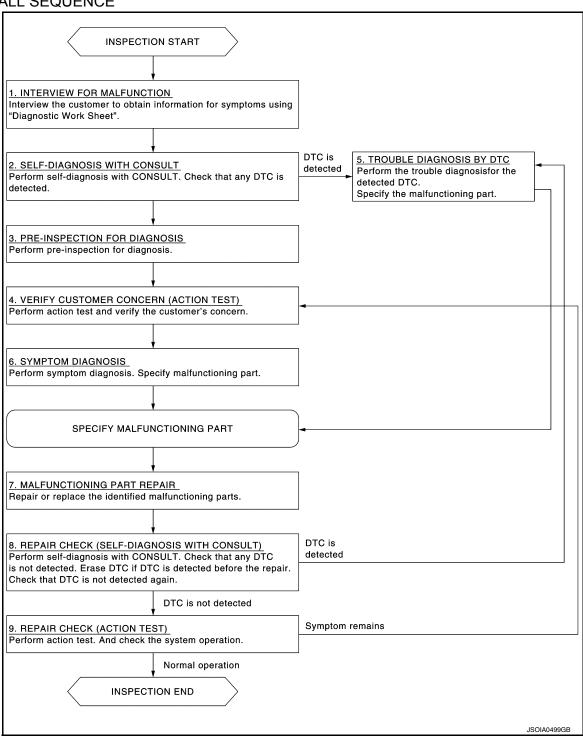
< BASIC INSPECTION > [MOD]

# **BASIC INSPECTION**

# DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

#### **OVERALL SEQUENCE**



#### **DETAILED FLOW**

# 1.INTERVIEW FOR MALFUNCTION

Interview the customer to obtain information about symptoms using "Diagnostic Work Sheet". (Refer to <u>DAS-251</u>, "<u>Diagnostic Work Sheet</u>".)

#### **DIAGNOSIS AND REPAIR WORK FLOW**

[MOD] < BASIC INSPECTION > Α >> GO TO 2. 2.self-diagnosis with consult Perform "All DTC Reading" with CONSULT. В 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 D Perform pre-inspection for diagnosis. Refer to DAS-253, "Inspection Procedure". >> GO TO 4. Е 4. ACTION TEST Perform MOD system action test to check the operation status. Refer to <u>DAS-254</u>, "<u>Description</u>". >> GO TO 6. 5.TROUBLE DIAGNOSIS BY DTC Perform trouble diagnosis for the detected DTC. Specify a malfunctioning part. Refer to DAS-239, "DTC Index" (ITS CONTROL UNIT). Н >> GO TO 7. **6**.SYMPTOM DIAGNOSIS Perform symptom diagnosis. Specify malfunctioning part. Refer to DAS-286, "Symptom Table". >> GO TO 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? M YFS >> GO TO 5. NO >> GO TO 9. Ν 9.REPAIR CHECK (ACTION TEST) Perform MOD system action test. Also check the system operation. Does it operate normally? DAS YES >> Inspection End. >> GO TO 4. NO Diagnostic Work Sheet INFOID:0000000009464900

# 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: November 2013 DAS-251 2014 Altima NAM

### **DIAGNOSIS AND REPAIR WORK FLOW**

< BASIC INSPECTION > [MOD]

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 occasions	☐ Stays ally ☐ Othe		Blinks	
Indicator/Warning lamps	☐ Warning systems ON indicator	☐ Stays ON	☐ Stays ☐ Othe		Blinks	
	Other lamps	☐ Stays ON ☐ Turned ON occasiona	☐ Stays		Blinks	
	☐ When using MOD					
Functions	☐ All functions do not opera☐ Warning function does not☐ Yawing function does not	ot operate. (□ No sour	nd □ No indic on is operated			)
Conditions	☐ Functions	function when driving on I when driving in a lane. in a different position fro	lane markers.			
Frequency	☐ Continuously	☐ Intermit	tently			
Light conditions	□ Not affected □ In the daytime □ Direct light	☐ At night ☐ Backlight		sunset (Stror	ng light)	
Driving conditions	☐ Not affected ☐ Vehicle speed	MPH ( km/h)	☐ Vehicle i	s stopped		
Weather conditions	☐ Not affected ☐ Fine ☐ Clouding	Raining	☐ Snowing ☐ Others (			
	☐ Not affected ☐ Highway ☐ Uneven roads	☐ In town ☐ Winding roads	Others (			
Road conditions	☐ Not affected	☐ Unclear	Others (			
Lane maker conditions	□Clear					

PRE-INSPECTION FOR DIAGNOSIS < BASIC INSPECTION > [MOI	וח
< BASIC INSPECTION > [MOI] PRE-INSPECTION FOR DIAGNOSIS	<u></u>
Inspection Procedure	
	4901
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).	
<u>ls it properly installed?</u> YES >> GO TO 3.	
NO >> Install rear view camera unit properly, and perform rear view camera calibration. Refer to DA	<u>S-</u>
256, "Description".  3. CHECK VEHICLE HEIGHT	
Check vehicle height. Refer to <u>FSU-26, "Wheelarch Height (Unladen*1)"</u> .	
s vehicle height appropriate?	
YES >> Inspection End. NO >> Repair vehicle to appropriate height.	

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< BASIC INSPECTION > [MOD]

# **ACTION TEST**

Description INFOID:000000009464902

- Perform action test to verify the customer's concern.
- Perform action test and check the system operation after system diagnosis.

#### **WARNING:**

Be careful of traffic conditions and safety around the vehicle when performing road test. **CAUTION**:

- · Fully understand the following items well before the road test;
- Precautions: Refer to DAS-73, "Precaution for LDW System Service".
- System description for LDW: Refer to DAS-77, "System Description".
- System description for BSW: Refer to DAS-152, "System Description".
- System description for MOD: Refer to DAS-228, "System Description".
- Handling precaution: Refer to DAS-82, "Precautions for Lane Departure Warning".

# Inspection Procedure

INFOID:0000000009464903

#### **WARNING:**

Be careful of traffic conditions and safety around the vehicle when performing road test. CAUTION:

- Fully understand the following items well before the road test;
- Precautions: Refer to DAS-73, "Precaution for LDW System Service".
- System description for LDW: Refer to DAS-77, "System Description".
- System description for BSW: Refer to DAS-152, "System Description".
- System description for MOD: Refer to DAS-228, "System Description".
- Handling precaution: Refer to DAS-232, "Precautions for Moving Objects Detection".

# 1. CHECK MOD SYSTEM SETTING

- Start the engine.
- Check that the MOD system setting can be enabled/disabled on the vehicle information display.
- 3. Turn OFF the ignition switch and wait for 30 seconds or more.
- 4. Check that the previous setting is saved when the engine starts again.

>> GO TO 2.

# 2. ACTION TEST FOR MOD

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

Vehicle condition/ Driver's operation			Vehicle response	
Moving Object Detection ON indicator	Vehicle speed (Approx.) [km/h (MPH)]	Status of vehicle detection within detection area	Indication on the Moving Object Detection indicator	Buzzer
OFF	_	_	OFF	OFF
	Less than approx. 8 km/h (5 MPH)	Vehicle is detected	ON	ON
Blue	Approx. 8 km/h (5 MPH) or more	Vehicle is absent	ON	OFF
		Vehicle is detected	ON	OFF
	, -	Vehicle is not detected	ON	OFF

#### NOTE:

After the operating conditions of warning are satisfied, the warning continues until the vehicle reaches a higher speed. Refer to <u>DAS-228</u>, "System <u>Description"</u>.

>> Inspection End.

# ADDITIONAL SERVICE WHEN REPLACING REAR VIEW CAMERA

[MOD] < BASIC INSPECTION > ADDITIONAL SERVICE WHEN REPLACING REAR VIEW CAMERA Α Description INFOID:0000000009464904 Always perform the calibration after removing and installing or replacing the rear view camera. В The system does not operate normally unless the rear view camera aiming adjustment is performed. Always perform it. Work Procedure INFOID:0000000009464905 CAMERA AIMING ADJUSTMENT D Perform the camera aiming adjustment with CONSULT. Refer to DAS-256, "Description". Е >> GO TO 2. 2.PERFORM SELF-DIAGNOSIS Perform the self-diagnosis of rear view camera with CONSULT. Check if any DTC is detected. F Is any DTC detected? YES >> Perform the trouble diagnosis for the detected DTC. Refer to <u>DAS-239</u>, "DTC Index". NO >> GO TO 3.  ${f 3.}$ LDW/BSW SYSTEM ACTION TEST Perform the LDW/BSW system action test. Refer to DAS-254, "Description". Н 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 Perform WASH ACTIVE on Active Test using CONSULT. 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 → 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 → Check tube with blue marking or check valve >> Inspection End.

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< BASIC INSPECTION > [MOD]

# REAR VIEW CAMERA CALIBRATION

Description INFOID:000000009464908

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:0000000009464907

# 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-239, "DTC Index".

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

# 2.PREPARATION BEFORE REAR VIEW CAMERA CALIBRATION

#### NOTE:

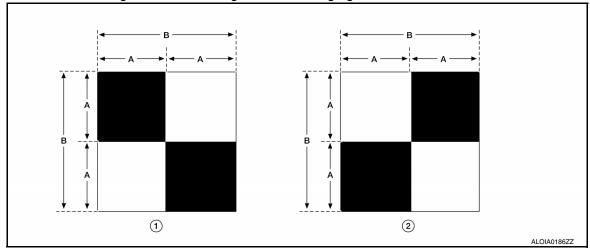
Select the "AVM" to diagnose the ITS control unit by CONSULT.

- 1. Perform pre-inspection for diagnosis. Refer to <a href="DAS-253">DAS-253</a>, "Inspection Procedure".
- 2. Adjust the tire pressure to the specified pressure value.
- Maintain no-load in vehicle.
- Check if coolant and engine oil are filled up to correct level and fuel tank is full.
- 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.
- 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)

[MOD] < BASIC INSPECTION >

>> Refer to DAS-257, "Work Procedure (Target Setting)".

# Work Procedure (Target Setting)

#### INFOID-0000000009464908

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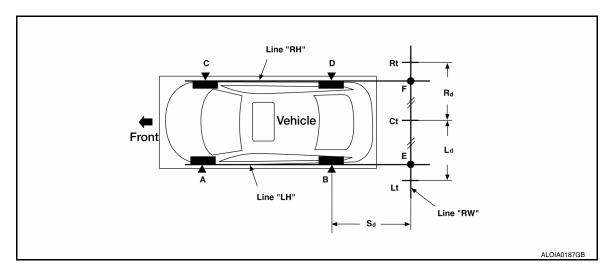
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#### **CAUTION:**

- 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.)

# 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)

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

- 3. Mark point "E" on the line "LH" at the positions 2125 mm (83.66 in) from point "B".
- 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".
- 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".
- Position the center of the target mark to point of "Ct".

String Wheel center Cone

Mark a point

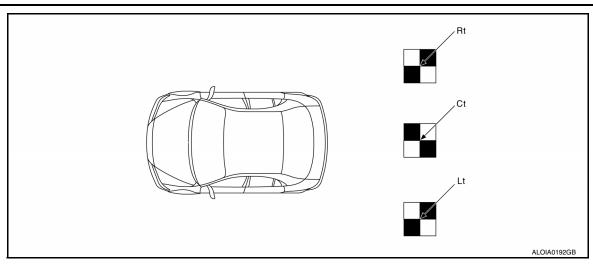
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2014 Altima NAM

Revision: November 2013



#### **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-258, "Work Procedure (Rear View Camera Calibration)".

Work Procedure (Rear View Camera Calibration)

INFOID:000000000946490

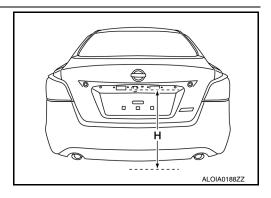
#### **CAUTION:**

Perform the calibration under the specified vehicle condition (fuel full, no-load, specified tire pressure, etc.). Refer to <u>DAS-256</u>, "Work <u>Procedure (Preparation)"</u>.

1. CHECK REAR VIEW CAMERA HEIGHT

Measure the rear view camera height "H".

>> GO TO 2.



# $2.\mathsf{REAR}$ VIEW CAMERA CALIBRATION

- 1. Select "Work Support" on "AVM" with CONSULT.
- 2. Select "REAR CAMERA ITS".
- 3. Select "OK".

#### **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.
- 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.
- 8. Confirm the displayed item.
- "Completed": Select "Completion".
- Otherwise, perform the following services:

# **REAR VIEW CAMERA CALIBRATION**

< BASIC INSPECTION > [MOD]

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 activated	Rear view camera unit malfunction.	Position the target appropriately 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-257</u> , "Work Procedure (Target Setting)".	
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 appropriately 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-256</u> , "Work Procedure (Preparation)".	

#### 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 <u>DAS-239</u>, "DTC Index".

NO >> GO TO 4.

# 4.ACTION TEST

Test the system operation by action test. Refer to <a href="DAS-254">DAS-254</a>, "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.	ABS actuator and electric unit (control unit)     ITS control unit

#### DTC CONFIRMATION PROCEDURE

# 1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition ON.
- 2. Perform "All DTC Reading" with CONSULT.
- 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 <u>DAS-260</u>, "<u>Diagnosis Procedure</u>".

NO >> Refer to GI-43, "Intermittent Incident".

# Diagnosis Procedure

INFOID:0000000009464911

# 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-45, "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-128</u>, "Removal and Installation".
- NO >> Replace ITS control unit. Refer to <u>DAS-68</u>, "Removal and Installation".

### C1A04 ABS/TCS/VDC SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

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# C1A04 ABS/TCS/VDC SYSTEM

DTC Logic

#### 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).	ABS actuator and electric unit (control unit)     ITS control unit

#### DTC CONFIRMATION PROCEDURE

# 1. PERFORM DTC CONFIRMATION PROCEDURE

- 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 <u>DAS-261</u>, "<u>Diagnosis Procedure</u>".

NO >> Inspection End.

# Diagnosis Procedure

INFOID:0000000009464913

# 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-45, "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. <u>Is any DTC detected?</u>

YES >> Replace ABS actuator and electric unit (control unit). Refer to <a href="mailto:BRC-128">BRC-128</a>, "Removal and Installation".

NO >> Replace ITS control unit. Refer to <a href="DAS-68">DAS-68</a>, "Removal and Installation".

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# C1A39 STEERING ANGLE SENSOR

DTC Logic

#### 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.	Steering angle sensor     ITS control unit

#### DTC CONFIRMATION PROCEDURE

# 1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition ON.
- 2. Perform "All DTC Reading" with CONSULT.
- 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 <u>DAS-262</u>, "<u>Diagnosis Procedure</u>".

NO >> Refer to GI-43, "Intermittent Incident".

# Diagnosis Procedure

INFOID:0000000009464915

# 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-45, "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-132</u>, "Removal and Installation".

NO >> Replace ITS control unit. Refer to <a href="DAS-68">DAS-68</a>, "Removal and Installation".

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

< DTC/CIRCUIT DIAGNOSIS >

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INFOID:0000000009464917

# U0122 VDC P-RUN DIAG

DTC Logic

### 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.
- 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 <u>DAS-263</u>, "<u>Diagnosis Procedure</u>".

NO >> Refer to GI-43, "Intermittent Incident".

# Diagnosis Procedure

 $1.\mathsf{check}$  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-128</u>, "Removal and Installation".

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Revision: November 2013 DAS-263 2014 Altima NAM

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# U0416 VDC CHECKSUM DIAG

DTC Logic

#### 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.
- 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 <u>DAS-264</u>, "<u>Diagnosis Procedure</u>".

NO >> Refer to GI-43, "Intermittent Incident".

# Diagnosis Procedure

INFOID:0000000009464919

# 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-128</u>, "Removal and Installation".

# **U0428 STEERING ANGLE SENSOR**

< DTC/CIRCUIT DIAGNOSIS >

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# **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.

# Diagnosis Procedure

INFOID:0000000009464921

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-SULT Function (ABS)"</u>.

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# U1000 CAN COMM CIRCUIT

Description INFOID.000000009464922

#### 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

#### 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 communication signal for 2 seconds or more	CAN communication system     ITS communication system

#### NOTE:

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

# Diagnosis Procedure

INFOID:0000000009464924

# 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-266</u>, "<u>Description</u>".

NO >> Refer to GI-43, "Intermittent Incident".

# **U1010 CONTROL UNIT (CAN)**

### < DTC/CIRCUIT DIAGNOSIS >

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# U1010 CONTROL UNIT (CAN)

Description INFOID:0000000009464925

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
U1010	CONTROL UNIT (CAN)	If ITS control unit detects malfunction by CAN controller initial diagnosis	ITS control unit

# Diagnosis Procedure

INFOID:0000000009464927

# 1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn the MAIN switch of ITS system ON.
- Perform "All DTC Reading" with CONSULT.
- 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-68</u>, "Removal and Installation".

NO >> Inspection End.

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# **U111A REAR CAMERA IMAGE SIGNAL CIRCUIT**

< DTC/CIRCUIT DIAGNOSIS >

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# U111A REAR CAMERA IMAGE SIGNAL CIRCUIT

DTC Logic

#### 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:0000000009464929

Regarding Wiring Diagram information, refer to DAS-241, "Wiring Diagram".

# 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	ITS control unit		Camera	Continuity
Connector	Terminal	Connector	Terminal	Continuity
M59	51	B35	7	Yes
IVIJ	52	D33	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

- Connect the ITS control unit connector and rear camera connector.
- 2. Turn the ignition switch ON.
- Check voltage between ITS control unit harness connector and ground.

Terminal				
(+) ITS control unit			Condition	Voltage (Approx.)
		(-)	30114141011	
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 <a href="DAS-68">DAS-68</a>, "Removal and Installation".

# **U111A REAR CAMERA IMAGE SIGNAL CIRCUIT**

# < DTC/CIRCUIT DIAGNOSIS >

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# 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	ITS control unit		w Camera	Continuity
Connector	Terminal	Connector	Terminal	Continuity
M59	50	B35	1	Yes
IVIO9	66	555	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
IVIS9	66	+	NO

### 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.

	Terr	minal			
(-	+)	(-	(–) Condition		Voltage
	ITS cor	ntrol 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 -40 µs ALOIA0179ZZ

#### Is inspection result normal?

YES >> Replace ITS control unit. Refer to <u>DAS-68</u>, "Removal and Installation".

NO >> Replace rear view camera. Refer to <u>DAS-219</u>, "Removal and Installation".

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Revision: November 2013 DAS-269 2014 Altima NAM

# **U1232 STEERING ANGLE SENSOR**

< DTC/CIRCUIT DIAGNOSIS >

[MOD]

# U1232 STEERING ANGLE SENSOR

DTC Logic

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.	Steering angle sensor     ITS control unit

# Diagnosis Procedure

INFOID:0000000009464931

# 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-233</u>, "CONSULT <u>Function (AVM)"</u>.
- 3. Check "Self Diagnostic Result" of "AVM" with CONSULT. Refer to <u>DAS-233</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 <a href="DAS-68">DAS-68</a>, "Removal and Installation".

NO >> Repair or replace malfunctioning parts.

# **U1305 CAMERA IMAGE CALIB**

< DTC/CIRCUIT DIAGNOSIS >

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# U1305 CAMERA IMAGE CALIB

DTC Logic

#### 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:0000000009464933

# 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-233, "CONSULT Function (AVM)"</u>. If problem persists, repair or replace the malfunctioning part.

NO >> Refer to GI-43, "Intermittent Incident".

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# **U1308 CAMERA CONFIG**

< DTC/CIRCUIT DIAGNOSIS >

[MOD]

# **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:0000000009464935

# 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-233, "CONSULT Function (AVM)"</u>.

NO >> Refer to GI-43, "Intermittent Incident".

### **U1309 PUMP UNIT CURRENT**

< DTC/CIRCUIT DIAGNOSIS >

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INFOID:0000000009464937

# U1309 PUMP UNIT CURRENT

**DTC Logic** INFOID:0000000009464936

### 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	Rear view camera washer control unit     Harness     ITS control unit

#### DTC CONFIRMATION PROCEDURE

# 1. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON.
- Perform "All DTC Reading" with CONSULT. 2.
- Check if the "U1309" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".

## Is "U1309" detected as the current malfunction?

>> Refer to DAS-273, "Diagnosis Procedure". YES

NO >> Inspection End.

# Diagnosis Procedure

Regarding Wiring Diagram information, refer to DAS-241, "Wiring Diagram".

# $1.\mathsf{check}$ rear view camera air pump motor power supply circuit

- Disconnect the rear view camera washer control unit connector.
- 2. Turn the ignition switch ON.
- 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	12	Ground	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

Turn the ignition switch OFF.

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?

Revision: November 2013

YES >> GO TO 3.

NO >> Repair the harness or connector.

# 3.CHECK CONTINUITY ITS CONTROL UNIT TO REAR VIEW CAMERA WASHER CONTROL UNIT

Disconnect the ITS control unit connector.

**DAS-273** 2014 Altima NAM DAS

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# **U1309 PUMP UNIT CURRENT**

### < DTC/CIRCUIT DIAGNOSIS >

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

ITS cor	ITS control unit Rear view camera washer control unit		Continuity	
Connector	Terminal	Connector Terminal		
M58	2	B16	7	Yes
IVISO	3	БЮ	8	165

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
OCIVI	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	Terminal	Connector Terminal		
B16	1	B17	1	Yes
ь10	2	БП	2	165

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
D16	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.

# 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.
- 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 >

[MOD]

	Terminal			
(-	+)			Voltago
	mera washer ol unit	(–)	Condition	Voltage (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 <u>DAS-68</u>, "Removal and Installation".

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### **U130B REAR CAMERA COMM ERROR**

< DTC/CIRCUIT DIAGNOSIS >

[MOD]

# U130B REAR CAMERA COMM ERROR

DTC Logic

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detecting condition	Possible causes
U130B	REAR CAMERA COMM ERROR	ITS control unit receives the incorrect communication signal from rear view camera.	Rear view camera     Harness     ITS control unit

### DTC CONFIRMATION PROCEDURE

# 1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- 2. Perform "All DTC Reading" with CONSULT.
- 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 <u>DAS-276</u>, "<u>Diagnosis Procedure</u>".

NO >> Inspection End.

# Diagnosis Procedure

INFOID:0000000009464939

Regarding Wiring Diagram information, refer to <a href="DAS-241">DAS-241</a>, "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

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

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

# Is the inspection result normal?

YES >> Replace the ITS control unit. Refer to <u>DAS-68</u>, "Removal and Installation".

NO >> Replace rear view camera. Refer to <u>DAS-219</u>, "Removal and Installation".

< DTC/CIRCUIT DIAGNOSIS >

[MOD]

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INFOID:0000000009464941

# U1310 PUMP UNIT CIRCUIT

**DTC Logic** INFOID:0000000009464940

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	Rear view camera washer control unit     Harness     ITS control unit

#### DTC CONFIRMATION PROCEDURE

# 1. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON.
- Perform "All DTC Reading" with CONSULT. 2.
- Check if the "U1310" is detected as the current malfunction in "Self Diagnostic Result" of "AVM".

### Is "U1310" detected as the current malfunction?

>> Refer to DAS-277, "Diagnosis Procedure". YES

NO >> Inspection End.

Diagnosis Procedure

Regarding Wiring Diagram information, refer to DAS-241, "Wiring Diagram".

# $1.\mathsf{check}$ rear view camera air pump motor power supply circuit

- Disconnect the rear view camera washer control unit connector.
- 2. Turn the ignition switch ON.
- Check voltage between rear view camera washer control unit connector and ground.

Terminal				
(	+)			Voltage
	amera washer ol unit	(–)	Condition	(Approx.)
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

Turn the ignition switch OFF.

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	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

Disconnect the ITS control unit connector.

**DAS-277** Revision: November 2013 2014 Altima NAM DAS

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# **U1310 PUMP UNIT CIRCUIT**

### < DTC/CIRCUIT DIAGNOSIS >

[MOD]

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

ITS cor	ITS control unit		mera washer	Continuity
Connector	Terminal	Connector Terminal		
M58	2	B16	7	Yes
OCIVI	3	БІО	8	162

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

ITS cor	ITS control unit		Continuity
Connector	Terminal	Ground	Continuity
M58	2	Glound	No
IVIOO	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	Terminal	Connector Terminal		
B16	1	B17	1	Yes
D 10	2	БП	2	165

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	
БІО	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.

# 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 >

[MOD]

	Terminal			
(-	+)			Voltage
	mera washer ol unit	(–)	Condition	Voltage (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 <u>DAS-68</u>, "Removal and Installation".

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# POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[MOD]

# POWER SUPPLY AND GROUND CIRCUIT

# Diagnosis Procedure

INFOID:0000000009464942

Regarding Wiring Diagram information, refer to <u>DAS-241, "Wiring Diagram"</u>.

# 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		switch		
	20	Ground	OFF	Battery voltage	
M58		Ground	ON	Battery voltage Battery voltage	
WOO	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.

# WARNING SYSTEMS SWITCH CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[MOD]

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# WARNING SYSTEMS SWITCH CIRCUIT

# Component Function Check

# INFOID:0000000009464943

# 1. CHECK WARNING SYSTEMS SWITCH INPUT SIGNAL

- Turn the ignition switch ON.
- Select the DATA MONITOR item "ITS SW 1" of "AVM" with CONSULT. 2.
- 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 3W 1	Warning systems switch is not pressed	OFF

#### Is the inspection result normal?

YES >> Warning systems switch circuit is normal.

>> Refer to DAS-281, "Diagnosis Procedure". NO

# Diagnosis Procedure

INFOID:0000000009464944

Regarding Wiring Diagram information, refer to <a href="DAS-241">DAS-241</a>, "Wiring Diagram".

# 1. CHECK WARNING SYSTEMS SWITCH SIGNAL INPUT

- Turn the ignition switch ON.
- Check voltage between ITS control unit harness connector and ground.

Terminals			Condition		
(+)		(-)	Condition	Voltage	
ITS control unit		Warning		(Approx.)	
Connector	Terminal	Ground	systems switch		
M58	32		Pressed	0 V	
IVIOO	32		Released	12 V	

#### Is the inspection result normal?

>> Replace the ITS control unit. Refer to DAS-68, "Removal and Installation".

NO >> GO TO 2.

# 2.CHECK WARNING SYSTEMS SWITCH

- Turn ignition switch OFF.
- Remove warning systems switch.
- Check warning systems switch. Refer to <u>DAS-282</u>, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace the warning systems switch. Refer to DAS-142, "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		Yes	

#### Is the inspection result normal?

YES >> GO TO 4.

> **DAS-281** Revision: November 2013 2014 Altima NAM

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# **WARNING SYSTEMS SWITCH CIRCUIT**

#### < DTC/CIRCUIT DIAGNOSIS >

[MOD]

NO >> Repair harness or connector.

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

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

ITS cor	ITS control unit		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	ITS control unit		Continuity
Connector	Terminal	Ground	Continuity
M58	32		No

#### Is the inspection result normal?

YES >> Replace the ITS control unit. Refer to DAS-68, "Removal and Installation".

NO >> Repair the harnesses or connectors.

# Component Inspection

INFOID:0000000009464945

# 1. CHECK WARNING SYSTEMS SWITCH

Check continuity of warning systems switch.

Terr	minal	Terminal Condition	
6	6 0	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-142, "Removal and Installation".

### WARNING SYSTEMS ON INDICATOR CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[MOD]

# WARNING SYSTEMS ON INDICATOR CIRCUIT

# Component Function Check

# INFOID:000000009464946

# 1. CHECK WARNING SYSTEMS ON INDICATOR

- Turn the ignition switch ON.
- Select the active test item "BSW ON INDICATOR" of "AVM" with CONSULT. 2.
- With operating the test item, check the operation.

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: Warning systems ON indicator illuminates On : Warning systems ON indicator is turned OFF

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### Is the inspection result normal?

YES >> Inspection End.

>> Refer to <u>DAS-283</u>, "<u>Diagnosis Procedure</u>". NO

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# Diagnosis Procedure

INFOID:0000000009464947

Regarding Wiring Diagram information, refer to <a href="DAS-241">DAS-241</a>, "Wiring Diagram".

Н

# 1. CHECK WARNING ON INDICATOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect warning system switch connector.
- Turn ignition switch ON. 3.
- Check voltage between warning system switch harness connector and ground.

	п	
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Terminals			
(	+)	(-)	Voltage
Warning system 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

- Turn ignition switch OFF.
- Disconnect the ITS control unit harness connector. 2.

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

Ν

ITS control unit		Warning system switch		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.

3.CHECK WARNING SYSTEMS ON INDICATOR SIGNAL CIRCUIT FOR SHORT

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

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### WARNING SYSTEMS ON INDICATOR CIRCUIT

### < DTC/CIRCUIT DIAGNOSIS >

[MOD]

ITS cor	ITS control unit		Continuity	
Connector	Terminal	Ground	Continuity	
M58	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-284, "Component Inspection".

#### Is the inspection result normal?

YES >> Replace the ITS control unit. Refer to <a href="DAS-68">DAS-68</a>, "Removal and Installation".

NO >> Replace warning systems switch. <u>DAS-142, "Removal and Installation"</u>.

# Component Inspection

INFOID:0000000009464948

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

#### Is the inspection result normal?

YES >> Inspection End.

NO >> Replace the warning systems switch. Refer to <a href="DAS-142">DAS-142</a>, "Removal and Installation".

WARNING BUZZER CIRCUIT		
< DTC/CIRCUIT DIAGNOSIS >	[MOD]	
WARNING BUZZER CIRCUIT		
Component Function Check	INFOID:0000000009464949	
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.		
s the inspection result normal?		
YES >> Inspection End. NO >> Refer to <u>DAS-285, "Diagnosis Procedure"</u> .		
Diagnosis Procedure	INFOID:0000000009464950	
.CHECK WARNING BUZZER OPERATION		
Vhile activating the buzzer with CONSULT, listen for the buzzer sound.		
Does warning buzzer sound?		
YES >> Replace the ITS control unit. Refer to <u>DAS-68, "Removal and Installation"</u> . NO >> Replace the combination meter (buzzer).		
140 - 77 Replace the combination meter (buzzer).		

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### MOD SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

[MOD]

# 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-228, "System Description".

Sympt	om	Possible cause	Inspection item/Reference page
Indicator/warning lamps do not illuminate when ignition switch OFF $\Rightarrow$ ON.	All of indicator/warning lamps do not illuminate;  • Moving Object Detection warning lamp  • Moving Object Detection ON indicator  • Warning systems ON indicator	Power supply and ground circuit of ITS control unit     ITS control unit     Combination meter	Power supply and ground circuit of ITS control unit. Refer to DAS-280, "Diagnosis Procedure"
	Buzzer is not sounding	Buzzer (combination meter)	Refer to DAS-285, "Component Function Check"

### MOD SYSTEM DOES NOT ACTIVATE

[MOD] < SYMPTOM DIAGNOSIS > MOD SYSTEM DOES NOT ACTIVATE Α Description INFOID:0000000009464952 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. D Diagnosis Procedure INFOID:0000000009464953  ${f 1}$  .CHECK MOVING OBJECT DETECTION SYSTEM SETTING Start the engine. 2. After starting the engine wait for 5 seconds or more. 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. Check that "mod SW" operates normally in "DATA MONITOR" of "AVM" with CONSULT. Н Is the inspection result normal? YES >> GO TO 3. NO >> GO TO 5.  ${f 3.}$  CHECK MOVING OBJECT DETECTION ON INDICATOR CIRCUIT Start the engine. 2. Select the active test item "MOD ON IND" of "AVM" with CONSULT. 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.  $oldsymbol{4}$  . PERFORM THE SELF-DIAGNOSIS OF COMBINATION METER Perform "All DTC Reading" with CONSULT. Check if the DTC is detected in self-diagnosis results of "METER/M&A". Refer to MWI-27, "DTC Index". M Is the inspection result normal? YES >> GO TO 5. NO >> GO TO 6. Ν  ${f 5.}$ PERFORM THE SELF-DIAGNOSIS Perform "All DTC Reading" with CONSULT. Check if the DTC is detected in self-diagnosis results of "AVM". Refer to DAS-239. "DTC Index". DAS Is any DTC detected? YES >> GO TO 6. NO >> GO TO 7. O. REPAIR OR REPLACE MALFUNCTIONING PARTS. Repair or replace malfunctioning parts. >> GO TO 7.

Revision: November 2013 DAS-287 2014 Altima NAM

7.CHECK MOVING OBJECT DETECTION SYSTEM

# **MOD SYSTEM DOES NOT ACTIVATE**

< SYMPTOM DIAGNOSIS > [MOD]

1. Erase "self-diagnosis result", and then perform "All DTC Reading" again after performing the action test. (Refer to <u>DAS-254, "Description"</u> for action test.)

2. Check that the Moving Object Detection system is normal.

>> Inspection End.

# 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 INFORMATION DISPLAY

Description INFOID:00000009464954

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

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

- 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: DAS-239, "DTC Index"
- MULTI AV (with BOSE): AV-328, "DTC Index"
- MULTI AV (without BOSE): AV-231, "DTC Index"
- METER/M&A: MWI-27, "DTC Index"

#### 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-233, "CONSULT Function (AVM)".

NO >> GO TO 4.

### $oldsymbol{4}.$ CHECK MULTIFUNCTION SWITCH

Operate the multifunction switch to check that the audio, navigation system, and air conditioner operate properly.

**DAS-289** 

#### Is the inspection result normal?

Revision: November 2013

YES >> Replace the ITS control unit. Refer to DAS-68, "Removal and Installation".

NO >> Repair or replace malfunctioning parts.

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### NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS > [MOD]

# NORMAL OPERATING CONDITION

Description INFOID:000000009464956

#### 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 condition 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 zone guickly.
- 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.
- Pedestrians, bicycles, animals.
- A vehicle passing at a speed greater than approximately 24km/h (15 MPH).
- A rear view camera may not detect approaching vehicles in certain situations:
- When the vehicle parked aside obstruct the beam of the rear view camera.
- When the vehicle is parked in an angled parking space.
- When the vehicle is parked on an inclined ground.
- When the vehicle turns around into your vehicle's aisle.
- When the angle formed by your vehicle and approaching vehicle is small.
- Severe weather or road spray conditions may reduce the ability of the radar to detect other vehicles.
- The rear view camera system may not detect:
- Small or moving object.
- Wedge-shaped objects.
- Object closer to the bumper than 30 cm (10 inch).
- Thin objects such as rope, wire, chain, etc.
- 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 the 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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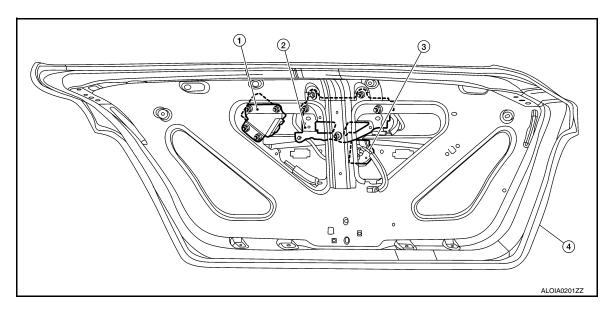
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# REMOVAL AND INSTALLATION

# REAR VIEW CAMERA WASHER CONTROL UNIT

**Exploded View** 



- 1. Rear view camera washer control unit
- 2. Rear view camera air pump motor
- 3. Rear view camera

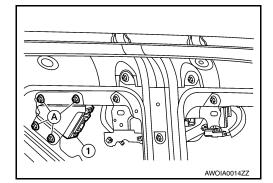
INFOID:0000000009464958

4. Trunk lid

# 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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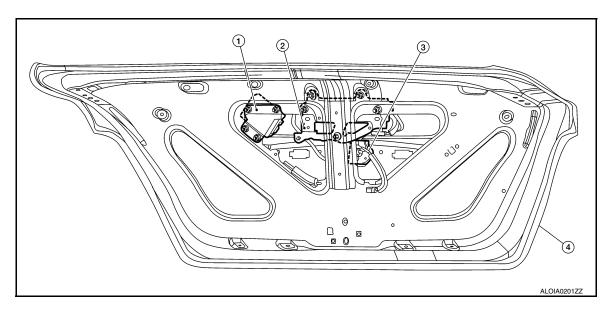
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Revision: November 2013 DAS-291 2014 Altima NAM

[MOD]

# REAR VIEW CAMERA AIR PUMP MOTOR

Exploded View



- 1. Rear view camera washer control unit
- 2. Rear view camera air pump motor
- 3. Rear view camera

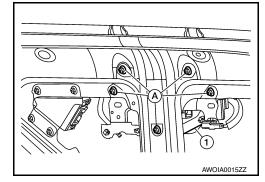
4. Trunk lid

### Removal and Installation

INFOID:0000000009464960

#### **REMOVAL**

- 1. Remove the trunk lid finisher. Refer to INT-33, "TRUNK LID FINISHER: Removal and Installation".
- 2. Disconnect the air tubes 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 (1).



#### **INSTALLATION**

Installation is in the reverse order of removal.