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PREPARATION

< PREPARATION >

PREPARATION

PREPARATION

Commercial Service Tool

Tool name		Description
Power tool		Loosening bolts and nuts.
	PBIC0191E	

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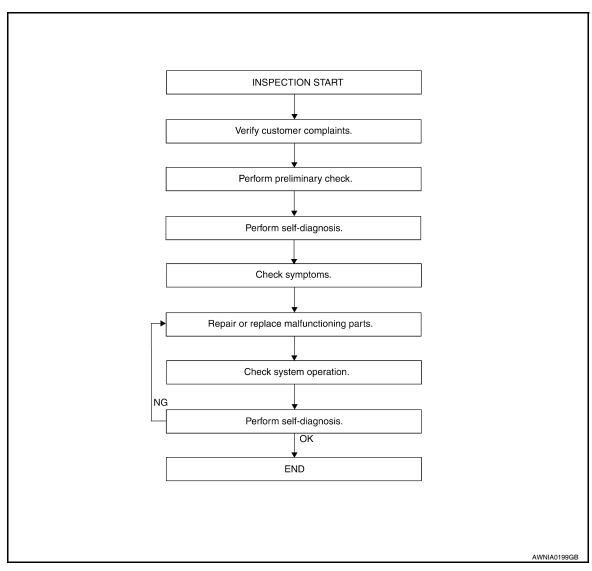
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BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

WORK FLOW



DETAILED FLOW

1. CUSTOMER INFORMATION

Interview the customer to obtain detailed information about the symptom.

>> GO TO 2

2. PRELIMINARY CHECK

Perform preliminary check. Refer to SN-6, "Preliminary Check".

>> GO TO 3

3. SELF-DIAGNOSIS

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION > Perform self-diagnosis. Refer to SN-8, "Self-Diagnosis Function" (with rear sonar system) or SN-13, "CON-SULT-III Function (SONAR)" (with front and rear sonar system). Α >> GO TO 4 В 4.SYMPTOM Check for symptoms. Refer to SN-45, "Symptom Table". >> GO TO 5 5. MALFUNCTIONING PARTS D Repair or replace the applicable parts. >> GO TO 6 Е 6.SYSTEM OPERATION Check system operation. Refer to SN-6, "Preliminary Check". F >> GO TO 7 7.SELF-DIAGNOSIS Perform self-diagnosis. Refer to SN-8, "Self-Diagnosis Function" (with rear sonar system) or SN-13, "CON-SULT-III Function (SONAR)" (with front and rear sonar system). Are any fault codes displayed? Н YES >> GO TO 5 NO >> Inspection End. M SN

INSPECTION AND ADJUSTMENT

< BASIC INSPECTION >

INSPECTION AND ADJUSTMENT

Preliminary Check

INFOID:0000000004916556

DESCRIPTION

The purpose of the sonar sensor preliminary check is to confirm that there are no outside factors affecting the sonar system.

CONDITIONS

- Ignition switch ON
- No obstructions within 3.0 m (10 ft.) of sonar sensors

SONAR SENSOR STATUS CHECK

- Check that the sonar sensors are properly aligned (no deformation in sensor mounting areas).
- · Check that snow, mud or other foreign objects are not adhering to the sonar sensors.
- Check that there is no deformation, scratches or other damage to the sonar sensors.
- · Check that water has not accumulated in the sonar sensors.

CAUTION:

Use water, cotton swab, or other soft material for cleaning the sensors.

1. Check that there are no obstacles within each sonar sensor's detection range.

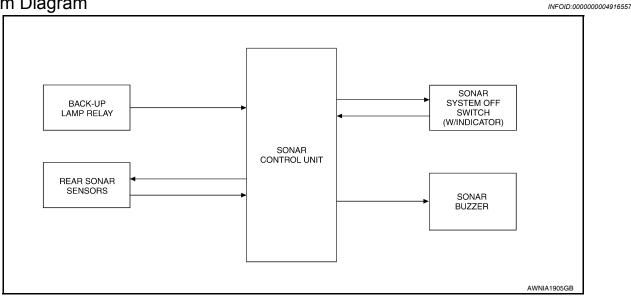
Sonar sensors	Detection range
Front Approx. 1.0 m (3 ft.) maxim	
Rear	Approx. 1.8 m (5.9 ft.) maximum

- Check that there are no nearby ultrasound sources such as the sounds of vehicle horns, motorcycle engines or truck air brakes.
- 3. Check that the vehicle is on a level surface.

FUNCTION DIAGNOSIS

REAR SONAR SYSTEM

System Diagram



System Description

FUNCTION

With power and ground supplied, transmission gear selector lever in R position, and the sonar system OFF switch ON, the rear sonar system will detect obstacles within 1.8 m (5.9 ft.) of the rear sonar sensors. The vehicle operator is notified of obstacles by varied rate of tone from the sonar buzzer depending on distance of obstacle being sensed.

SONAR SYSTEM OFF SWITCH

With power and ground supplied to the sonar control unit, transmission gear selector lever in R position, the sonar system can be disabled and the sonar buzzer silenced by momentarily pressing the sonar system OFF switch. The sonar system OFF indicator lamp will be illuminated in the sonar system OFF switch.

The rear sonar system and buzzer will be disabled and the sonar system OFF indicator will be illuminated until the ignition switch is turned OFF. When the ignition switch is turned ON, the rear sonar system will be enabled. Depressing the sonar system OFF switch again will enable the rear sonar system also. Enabling the rear sonar system will cause the rear sonar system OFF indicator to go out. If the indicator light is blinking there is a malfunction in the system.

SONAR BUZZER

With power and ground supplied to the sonar control unit and the A/T selector lever in R position, a stationary object that is at least 7.0 cm (2.8 in.) wide and 1.0 m (39.0 in.) tall and that is closer than 1.8 m (5.9 ft.) will be detected by the rear sonar sensors, causing the sonar buzzer to sound a tone. As the vehicle moves closer to the object, the rate of the tone will increase. When the object is less than 25.0 cm (10 in.) from the rear bumper, the tone will sound continuously.

REAR SONAR SENSORS

With power and ground supplied to the rear sonar sensors, the sonar sensors transmit an ultrasonic signal. This signal is reflected back to the sensor by objects large enough and close enough to be detected. The rear sonar sensors measure the time from the transmitted signal to the time the signal is reflected back and sends this information to the sonar control unit.

BACK-UP LAMP RELAY

The back-up lamp relay provides a reverse signal to the sonar control unit.

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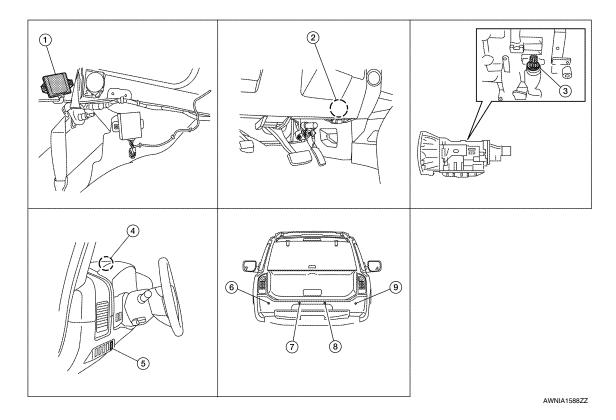
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Component Parts Location

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- Sonar control unit B24 (view with luggage side finisher LH removed)
- 4. Sonar buzzer M47
- Rear sonar sensor LH inner C103
- 2. Back-up lamp relay M73
- Sonar system OFF switch M116 (with sonar system OFF indicator)
- 8. Rear sonar sensor RH inner C104 9.
- 3. A/T assembly F9
- Rear sonar sensor LH outer C102
- Rear sonar sensor RH outer C105

Component Description

INFOID:0000000004916560

Component	Function	
Sonar control unit	Controls sonar system and provides self-diagnosis	
Back-up lamp relay	Provides reverse signal for sonar control unit	
A/T assembly	Controls back-up lamp relay	
Sonar buzzer	Sounds a signal when objects are detected in the rear of the vehicle	
Sonar system OFF switch	Enables the driver to turn system off and signals a system malfunction	
Sonar sensor	Senses objects in the rear of the vehicle	

Self-Diagnosis Function

INFOID:0000000004916561

There are four modes of self-diagnosis. These modes must be followed in the following order:

- 1. Entering diagnostics mode
- 2. Requesting number of fault codes mode
- 3. Requesting fault codes mode
- 4. Clearing fault codes mode

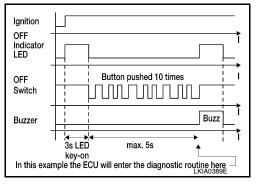
Self-diagnosis can be manually exited by turning the ignition OFF or selecting reverse gear. Self-diagnosis will exit unless a fault code request occurs before a message is repeated five times without acknowledgement.

ENTERING DIAGNOSTICS MODE

REAR SONAR SYSTEM

< FUNCTION DIAGNOSIS >

- Turn ignition switch ON. Sonar system OFF switch indicator lamp illuminates for three seconds and then turns off.
- 2. Immediately push sonar system OFF switch ten times within five
- The sonar buzzer will sound once and the sonar system OFF indicator will flash once.



REQUESTING NUMBER OF FAULT CODES MODE

While in "entering diagnostic mode", push sonar system OFF switch once within 30 seconds of entering diagnostic mode. NOTE:

If the number of fault codes is not requested within 30 seconds after entering diagnostic mode, the system will return to regular operation mode.

- The sonar buzzer will sound once. 2.
- Sonar system OFF indicator will flash once and sonar buzzer will sound once for each fault code detected.
- There will be a four second pause.
- The number of fault codes will repeat five times then pause.

NOTE:

Self-diagnosis will exit unless "requesting fault codes mode" occurs before five repeats ends.

REQUESTING FAULT CODES MODE

- While in "requesting number of fault codes" mode, push sonar system OFF switch once.
- The sonar buzzer will sound once. 2.
- Sonar system OFF indicator will flash and sonar buzzer will sound the first digit of the fault code followed by a one second pause.
- Sonar system OFF indicator will flash and sonar buzzer will sound the second digit of the fault code followed by a four second pause.
- 5. Each fault code will repeat five times then pause.
- Write down each fault code. Then, acknowledge the fault code by pushing the sonar system OFF switch once (the sonar buzzer may sound).

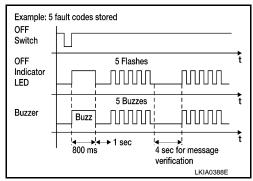
NOTE: "Requesting fault codes mode" will exit unless the fault code is acknowledged before it is repeated five

times. When all fault codes have been indicated, "clearing fault codes mode" will be entered. Refer to SN-31, "DTC Index".

CLEARING FAULT CODES MODE

NOTE:

While in "clearing fault codes mode", self-diagnosis will automatically exit if no activity occurs for 30 seconds.



Example: Display fault code: 2 3: OFF switch failure

Flashes

IJIJ

2

Buzzes

▶1 sec **५** →1 sec

Buzz

Flashes

3

Buzzes

4 sec for

message verification

OFF Switch

OFF

LED

Buzzer

Indicator

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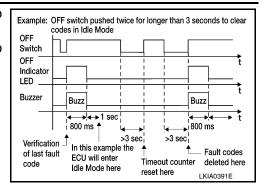
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REAR SONAR SYSTEM

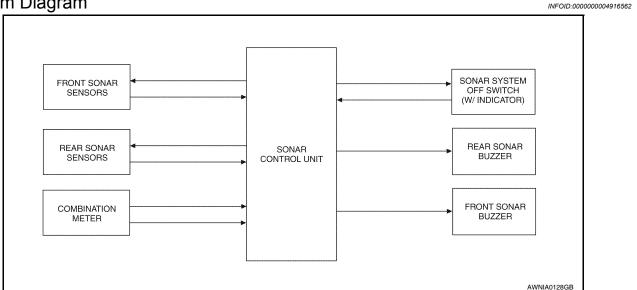
< FUNCTION DIAGNOSIS >

- 1. Push and hold sonar system OFF switch for three seconds to reset time-out counter.
- 2. Push and hold sonar system OFF switch for three seconds to clear codes.



FRONT AND REAR SONAR SYSTEM

System Diagram



System Description

INFOID:0000000004916563

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FUNCTION

With power and ground supplied, transmission gear selector lever in R position, and the sonar system OFF switch ON, the sonar system will detect obstacles within 1.8 m (5.9 ft.) of the rear sonar sensors and the two outer front sonar sensors. The vehicle operator is notified of obstacles by varied rate of tone from the rear sonar buzzer depending on distance of obstacle being sensed. If the vehicle speed reaches 50 km/h (31 MPH) the sonar system will shut down.

With power and ground supplied, transmission gear selector lever in a forward drive gear, and the sonar system OFF switch ON, the front sonar system will detect obstacles within 1.0 m (3 ft.) of the front sonar sensors. The vehicle operator is notified of obstacles by varied rate of tone from the front sonar buzzer depending on distance of obstacle being sensed. When the vehicle accelerates to 12 km/h (7.5 MPH) the sonar system will shut down. When the vehicle decelerates to 8 km/h (5 MPH) the sonar system will turn back on.

SONAR SYSTEM OFF SWITCH

With power and ground supplied to the sonar control unit, transmission gear selector lever in a position other than P, the sonar system can be disabled and the sonar buzzers silenced by momentarily pressing the sonar system OFF switch. The sonar system OFF indicator lamp will be illuminated in the sonar system OFF switch. The sonar system and buzzers will be disabled and the sonar system OFF indicator will be illuminated until the ignition switch is turned OFF. When the ignition switch is turned ON, the sonar system will be enabled. Depressing the sonar system OFF switch again will enable the sonar system also. Enabling the sonar system will cause the sonar system OFF indicator to go out. The indicator will flash if a malfunction exists in the sys-

SONAR BUZZERS

With power and ground supplied to the sonar control unit and the A/T selector lever in R position, a stationary object that is at least 9.0 cm (3.5 in.) wide and that is closer than 1.8 m (5.9 ft.) will be detected by the rear sonar sensors and the two outer front sonar sensors, causing the rear sonar buzzer to sound a tone. As the vehicle moves closer to the object, the rate of the tone will increase. When the object is less than 25.0 cm (10 in.) from the rear bumper, the tone will sound continuously.

With power and ground supplied to the sonar control unit and the A/T selector lever in a forward drive gear, a stationary object that is at least 9.0 cm (3.5 in.) wide and that is closer than 1.0 m (3 ft.) will be detected by the front sonar sensors, causing the front sonar buzzer to sound a tone. As the vehicle moves closer to the object, the rate of the tone will increase. When the object is less than 30 cm (12 in.) from the front bumper, the tone will sound continuously.

REAR SONAR SENSORS

With power and ground supplied to the rear sonar sensors, the sonar sensors transmit an ultrasonic signal. This signal is reflected back to the sensor by objects large enough and close enough to be detected. The rear

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FRONT AND REAR SONAR SYSTEM

< FUNCTION DIAGNOSIS >

sonar sensors measure the time from the transmitted signal to the time the signal is reflected back and send this information to the sonar control unit.

FRONT SONAR SENSORS

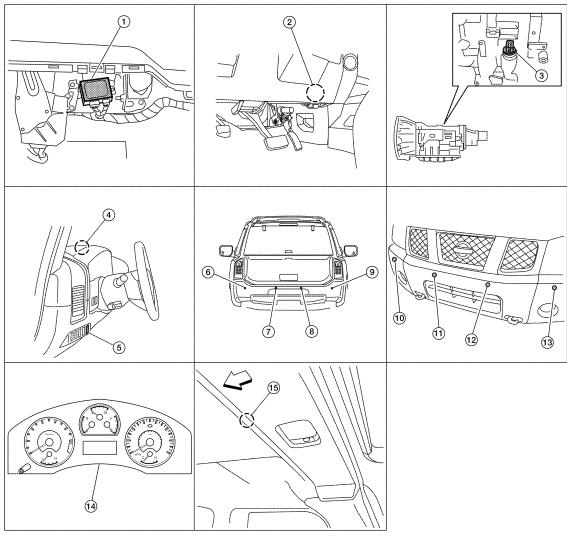
With power and ground supplied to the front sonar sensors, the sonar sensors transmit an ultrasonic signal. This signal is reflected back to the sensor by objects large enough and close enough to be detected. The front sonar sensors measure the time from the transmitted signal to the time the signal is reflected back and send this information to the sonar control unit.

COMBINATION METER

The combination meter provides the vehicle speed and park signals to the sonar control unit.

Component Parts Location

INFOID:0000000004916564



AWNIA1854ZZ

 ✓ Front

- Sonar control unit B56, B57 (View with luggage side finisher LH removed)
- Front sonar buzzer M118
- 7. Rear sonar sensor LH inner C103
- 10. Front sonar sensor RH outer E166
- 13. Front sonar sensor LH outer E158

- 2. Back-up lamp relay M73
- 5. Sonar system OFF switch M116 (with sonar system OFF indicator)
- 8. Rear sonar sensor RH inner C104 9.
- 11. Front sonar sensor RH inner E163 12.
- 14. Combination meter M24
- 3. A/T assembly F9
- 6. Rear sonar sensor LH outer C102
- 9. Rear sonar sensor RH outer C105
- 12. Front sonar sensor LH inner E162
- Rear sonar buzzer B166 (View with back door open)

FRONT AND REAR SONAR SYSTEM

< FUNCTION DIAGNOSIS >

Component Description

INFOID:0000000004916565

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Component	Function	
Sonar control unit	Controls sonar system and provides self-diagnosis	
Back-up lamp relay	Provides reverse signal for sonar control unit	
A/T assembly	Controls back-up lamp relay	
Front sonar buzzer	Sounds a signal when objects are detected in the front of the vehicle	
Rear sonar buzzer	Sounds a signal when objects are detected in the rear of the vehicle	
Sonar system OFF switch	Enables the driver to turn the system off and signals a system malfunction	
Front sonar sensors	Senses objects in the front of the vehicle	
Rear sonar sensors	Senses objects in the rear of the vehicle	
Combination meter	Provides Park and vehicle speed signals for sonar control unit	

CONSULT-III Function (SONAR)

INFOID:0000000004916566

Diagnosis mode	Description
SELF-DIAG RESULTS	Displays sonar control unit self-diagnosis results.

SELF DIAGNOSTIC PROCEDURE

CONSULT-III can be used to read and clear DTCs. Refer to GI-46, "Description".

SELF DIAGNOSTIC RESULTS

Refer to SN-44, "DTC Index".

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COMPONENT DIAGNOSIS

POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure (With Rear Sonar System)

INFOID:0000000004916567

INSPECTION FOR POWER SUPPLY AND GROUND CIRCUIT

1.CHECK FUSES

Check for blown rear sonar system fuses.

Unit	Power Source	Fuse	Location
Sonar control unit	Sonar control unit ON or START	12	Fuse block (J/B)
Sonai control unit		51	IPDM E/R

Are any fuses blown?

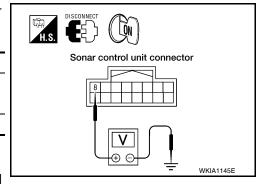
YES >> If fuse is blown, be sure to eliminate cause of malfunction before installing new fuse. Refer to <u>GI-41, "Circuit Inspection"</u>.

NO >> GO TO 2.

2. CHECK POWER SUPPLY CIRCUIT

- 1. Disconnect sonar control unit connector.
- 2. Turn ignition switch ON.
- 3. Check voltage between sonar control unit connector B24 terminal 8 and ground.

Terminals			Ignition switch position	
	(+)	(-)	ON or START	
Connector	Terminal	()	ON OF START	
B24	8	Ground	Battery voltage	



Is there battery voltage?

YES >> GO TO 3.

NO >> Check harness for open between sonar control unit and fuse.

3. CHECK GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- Check continuity between sonar control unit B24 terminal 6 and ground.

Terminals				
(+)		(-)	Continuity	
Connector	Terminal	(-)		
B24	6	Ground	Yes	

Sonar control unit connector WKIA1146E

Is there continuity?

YES >> Inspection End.

NO >> Check harness ground circuit.

Diagnosis Procedure (With Front and Rear Sonar System)

INFOID:0000000004916568

INSPECTION FOR POWER SUPPLY AND GROUND CIRCUIT

1. CHECK FUSES

Check for blown sonar system fuses.

POWER SUPPLY AND GROUND CIRCUIT

< COMPONENT DIAGNOSIS >

Unit	Power Source	Fuse	Location
Sonar control unit	ON or START	12	Fuse block (J/B)
Sonar control unit		51	IPDM E/R

Are any fuses blown?

YES >> If fuse is blown, be sure to eliminate cause of malfunction before installing new fuse. Refer to GI-41, "Circuit Inspection".

NO >> GO TO 2.

2.check power supply circuit

- Disconnect sonar control unit connector B56.
- 2. Turn ignition switch ON.
- Check voltage between sonar control unit connector B56 terminal 1 and ground.

Terminals			
	(+)	(-)	Voltage
Connector	Terminal	(-)	
B56	1	Ground	Battery voltage

Is there battery voltage?

YES >> GO TO 3.

NO >> Check harness for open between sonar control unit and fuse.

3. CHECK GROUND CIRCUIT

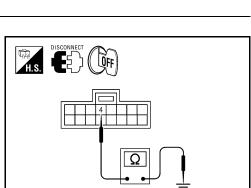
- Turn ignition switch OFF.
- Check continuity between sonar control unit B56 terminal 4 and ground.

(+)	(-)	Continuity
Connector	Terminal	(-)	
B56	4	Ground	Yes

Is there continuity?

YES >> Inspection End.

NO >> Check harness ground circuit.



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SONAR SENSOR CIRCUIT INSPECTION

< COMPONENT DIAGNOSIS >

SONAR SENSOR CIRCUIT INSPECTION

Description INFOID.000000004916569

With power and ground supplied to the sonar sensors, the sonar sensors transmit an ultrasonic signal. This signal is reflected back to the sensor by objects large enough and close enough to be detected. The sonar sensors measure the time from the transmitted signal to the time the signal is reflected back and send this information to the sonar control unit.

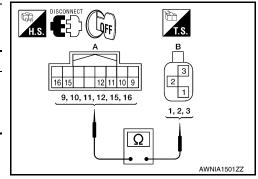
Diagnosis Procedure (With Rear Sonar System)

INFOID:0000000004916570

1. CHECK REAR SONAR SENSOR CIRCUITS

- 1. Turn ignition switch OFF.
- Disconnect sonar control unit connector and rear sonar sensor connectors.
- 3. Check continuity between sonar control unit harness connector (A) and rear sonar sensor harness connectors (B).

Connector	Terminal	Connector	Terminal	Continuity
	16		1	
B24 (A)	15	C102, C103, C104, C105 (B)	3	Yes
	9, 10, 11, 12		2	



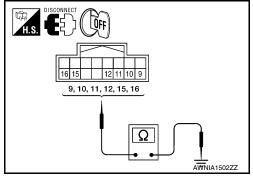
 Check continuity between sonar control unit harness connector and ground.

Connector	Terminal	Continuity	
B24	9, 10, 11, 12, 15, 16	Ground	No

Are the inspection results normal?

YES >> Inspection End.

NO >> Repair harness or connector.



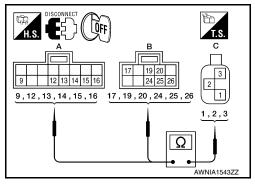
Diagnosis Procedure (With Front and Rear Sonar System)

INFOID:0000000004916571

1. CHECK SONAR SENSOR CIRCUITS

- Turn ignition switch OFF.
- 2. Disconnect sonar control unit connectors and sonar sensor connectors.
- 3. Check continuity between sonar control unit harness connectors (A, B) and sonar sensor harness connectors (C).

Connector	Terminal	Connector	Terminal	Continuity
	9		1	
B56 (A)	12	C102, C103, C104, C105	3	
	13, 14, 15, 16		2	Yes
	17		1	163
B57 (B)	26	E158, E162, E163, E166	3	
	19, 20, 24, 25		2	



SONAR SENSOR CIRCUIT INSPECTION

< COMPONENT DIAGNOSIS >

4. Check continuity between sonar control unit harness connectors (A, B) and ground.

Connector	Terminal	Continuity	
B56 (A)	9, 12, 13, 14, 15, 16	Ground	No
B57 (B)	17, 19, 20, 24, 25, 26	Glound	140

Are the inspection results normal?

YES >> Inspection End.

NO >> Repair harness or connector.

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SONAR BUZZER CIRCUIT INSPECTION

< COMPONENT DIAGNOSIS >

SONAR BUZZER CIRCUIT INSPECTION

Description INFOID:000000004916572

When the A/T selector lever is not it park or neutral, a stationary object will be detected by the sonar sensors causing the front or rear sonar buzzer to sound a tone. As the vehicle moves closer to the object, the rate of the tone will increase. When the object is very close to the vehicle, the tone will sound continuously.

Diagnosis Procedure (With Rear Sonar System)

INFOID:0000000004916573

1. CHECK SONAR BUZZER

Refer to SN-19, "Component Inspection".

Is the inspection result normal?

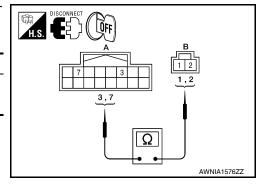
YES >> GO TO 2.

NO >> Replace sonar buzzer. Refer to <u>SN-50, "Removal and Installation"</u>.

2.CHECK SONAR BUZZER CIRCUITS

- 1. Turn ignition switch OFF.
- 2. Disconnect sonar control unit connector and sonar buzzer connector.
- Check continuity between sonar control unit harness connector (A) and sonar buzzer harness connector (B).

Connector	Terminal	Connector	Terminal	Continuity
B24 (A)	3	M47 (B)	2	Yes
D24 (A)	7	WI T (D)	1	103



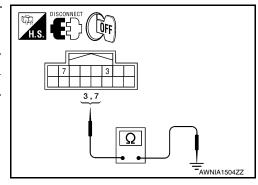
 Check continuity between sonar control unit harness connector and ground.

Connector	Terminal	Continuity	
B24	3, 7	Ground	No

Are the inspection results normal?

YES >> Inspection End.

NO >> Repair harness or connector.



Diagnosis Procedure (With Front and Rear Sonar System)

INFOID:0000000004916574

1. CHECK BUZZERS

Refer to SN-19, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace buzzer. Refer to SN-50, "Removal and Installation".

CHECK BUZZER CIRCUITS

- 1. Turn ignition switch OFF.
- 2. Disconnect sonar control unit connectors and sonar buzzer connectors.

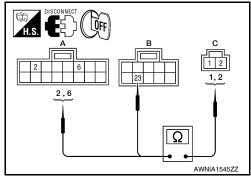
Revision: April 2009 SN-18 2010 Armada

SONAR BUZZER CIRCUIT INSPECTION

< COMPONENT DIAGNOSIS >

3. Check continuity between sonar control unit harness connectors (A, B) and sonar buzzer harness connectors (C).

Connector	Terminal	Connector	Terminal	Continuity
B56 (A)	2	B166, M118 (C)	1	
B30 (A)	6	B166 (C)	2	Yes
B57 (B)	23	M118 (C)	2	



4. Check continuity between sonar control unit harness connectors (A, B) and ground.

Connector	Terminal	Continuity	
B56 (A)	2, 6	Ground	No
B57 (B)	23	Glound	NO

Are the inspection results normal?

YES >> Inspection End.

NO >> Repair harness or connector.

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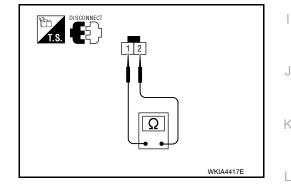
Component Inspection

SONAR BUZZER

- Disconnect the sonar buzzer connector.
- 2. Check continuity between sonar buzzer terminals 1 and 2.

1 - 2

: Continuity should exist



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Revision: April 2009 SN-19 2010 Armada

SONAR SYSTEM OFF SWITCH CIRCUIT INSPECTION

< COMPONENT DIAGNOSIS >

SONAR SYSTEM OFF SWITCH CIRCUIT INSPECTION

Description INFOID:000000004916576

The sonar system can be disabled by momentarily pressing the sonar system OFF switch. The sonar system OFF indicator lamp will be illuminated when the sonar system is OFF. Enabling the sonar system will cause the sonar system OFF indicator to go out. The indicator will flash if a malfunction exists in the system.

Diagnosis Procedure (With Rear Sonar System)

INFOID:0000000004916577

1. CHECK SONAR SYSTEM OFF SWITCH

Refer to SN-21, "Component Inspection".

Is the inspection result normal?

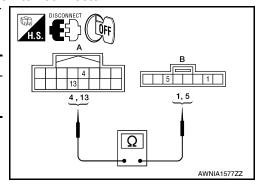
YES >> GO TO 2.

NO >> Replace sonar system OFF switch. Refer to <u>IP-14, "Removal and Installation"</u>.

2.CHECK SONAR SYSTEM OFF SWITCH CIRCUITS

- Turn ignition switch OFF.
- 2. Disconnect sonar control unit connector and sonar system OFF switch connector.
- 3. Check continuity between sonar control unit harness connector (A) and sonar system OFF switch harness connector (B).

Connector	Terminal	Connector	Terminal	Continuity
B24 (A)	4	M116 (B)	5	Yes
D24 (A)	13	W110 (b)	1	163



4. Check continuity between sonar system OFF switch harness connector and ground.

Connector	Terminal	Continuity	
M116	1, 5	Ground	No
IVITIO	2, 6 Ground	Ground	Yes

DISCONNECT (FF) 1, 2, 5, 6 ΔWNIA 1578ZZ

Are the inspection results normal?

YES >> Inspection End.

NO >> Repair harness or connector.

Diagnosis Procedure (With Front and Rear Sonar System)

INFOID:0000000004916578

1. CHECK SONAR SYSTEM OFF SWITCH

Refer to SN-21, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace sonar system OFF switch. Refer to <u>IP-14, "Removal and Installation"</u>.

2.CHECK SONAR SYSTEM OFF SWITCH CIRCUITS

- 1. Turn ignition switch OFF.
- 2. Disconnect sonar control unit connector and sonar system OFF switch connector.

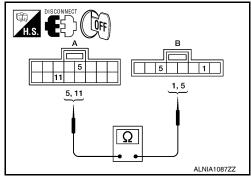
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SONAR SYSTEM OFF SWITCH CIRCUIT INSPECTION

< COMPONENT DIAGNOSIS >

3. Check continuity between sonar control unit harness connector (A) and sonar system OFF switch harness connector (B).

Connector	Terminal	Connector	Terminal	Continuity	
B56 (A)	5	M116 (B)	5	Yes	
D30 (A)	11	WITTO (D)	1	165	



4. Check continuity between sonar system OFF switch harness connector and ground.

Connector	Terminal	Continuity			
M116	1, 5	Ground	No		
WITTO	2, 6	Glound	Yes		

Are the inspection results normal?

YES >> Inspection End.

NO >> Repair harness or connector.

1, 2, 5, 6 ALNIA1088ZZ

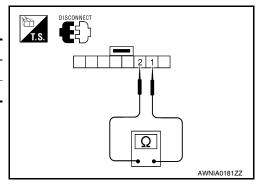
INFOID:0000000004916579

Component Inspection

SONAR SYSTEM OFF SWITCH

- 1. Disconnect the sonar system OFF switch connector.
- 2. Check continuity between the following switch terminals.

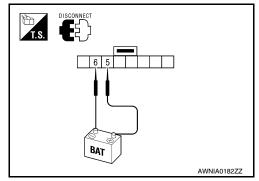
Sonar system OFF switch	Terminals	Continuity			
Depressed	1 - 2	Yes			
Released	1-2	No			



SONAR SYSTEM OFF INDICATOR

- 1. Disconnect the sonar system OFF switch connector.
- 2. Apply battery voltage to switch terminal 5.
- 3. Check the sonar system OFF indicator operation when switch terminal 6 is connected to battery ground.

	Terminals	Condition	Operation	
Sonar system	5	Battery voltage	Indicator ON	
OFF switch	6	Ground		



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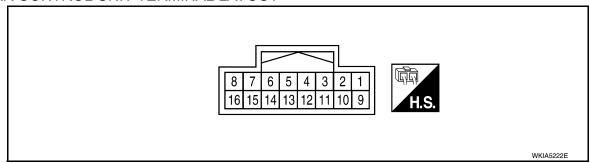
< ECU DIAGNOSIS >

ECU DIAGNOSIS

SONAR CONTROL UNIT FOR REAR SONAR SYSTEM

Reference Value

SONAR CONTROL UNIT TERMINAL LAYOUT



TERMINALS AND REFERENCE VALUES FOR SONAR CONTROL UNIT

Terminal			Condition		Reference value (V)				
(wire color)	Item	Ignition switch	Operatio	n	(Approx.)				
3 (R)	Sonar buzzer return	ON	_		0 - 12 (variable)				
4 (BR/Y)	Sonar system OFF	ON	Sonar system OFF	ON	0				
4 (DIV1)	indicator output	ON	switch	OFF	Battery voltage				
5 (G/W)	Reverse signal	ON	Transmission gear se- lector lever	R position	Battery voltage				
3 (0/11)	Neverse signal	ON	Transmission gear se- lector lever	Not R position	0				
6 (B)	Sonar control unit ground	_	_		0				
7 (L)	Sonar buzzer drive signal	ON	_		Battery voltage				
8 (G/R)	Sonar control unit power	ON	_		Battery voltage				
9 (GR)	Rear sonar sensor signal - RH outer	ON	Sonar system OFF swi Transmission gear sele sition No obstacles	Battery voltage					
10 (P)	Rear sonar sensor signal - LH outer	ON	Sonar system OFF swi Transmission gear sele sition No obstacles	Battery voltage					
11 (O)	Rear sonar sensor signal - LH inner	ON		 Sonar system OFF switch ON Transmission gear selector lever in R position 					
12 (LG)	Rear sonar sensor signal - RH inner	ON						 Transmission gear selector lever in R position 	
13 (LG)	Sonar system OFF	ON	Sonar system OFF	ON	0				
.0 (20)	switch signal	J.,	switch	OFF	Battery voltage				

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Terminal			Condition	Reference value (V)
(wire color)	Item	Ignition switch	Operation	(Approx.)
15 (Y)	Rear sonar sensor ground	ON	_	0
16 (LG/B)	Rear sonar sensor power	ON	Ignition switch ON	Battery voltage

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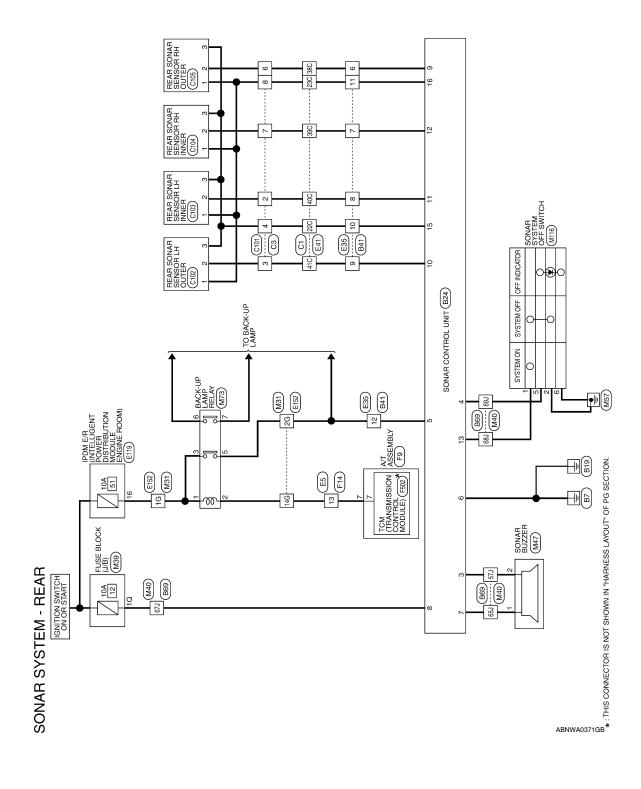
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Wiring Diagram



Connector No. M39 Connector Name FUSE BLOCK (J/B)	Connector Color WHITE		30 2010	H.S.	Terminal No. Color of Signal Name	G/R					Connector No. M47				H.S.		Terminal No. Wire Signal Name	1 L –	2 R I					
<u> </u>	10						1									•								
lame											lame													
Signal Name	1	1	ı								Signal Name	1	ı	1	I	1								
Color of Wire	g	G/W	æ								Color of Wire	æ	_	G/R	LG	BR/Y								
Terminal No.	5	26	14G								Terminal No.	57,1	65J	f29	687	P69				1				
		_											 _ [[<u>]</u>		2]					
				3G 2G 1G 8G 7G 6G	56 146 136 126 116	:5G 24G 23G 22G	15G 34G 33G 32G 31G	5G 54G 53G 52G 51G 5G 64G 63G 62G	72G 71G 77G 76G		ا ا	_			30 20 10	72	15J 14J 13J 12J 11J 25J 24J 23J 22J		35J 34J 33J 32J 31J	55J 54J 53J 52J 51J 65J 64J 63J 62J	75J 74J 73J 72J 71J 80J 79J 78J 77J 76J			
Connector No. M31 Connector Name WIRE TO WIRE	WHITE			5G 4G 3G 2G 1G 10G 9G 8G 7G 6G	06 196 186 176 166 1	30G 29G 28G 27G 26G 25G 24G 23G 22G	416 406 396 386 376 366 346 336 326 316 506 496 486 476 466 456 446 436 426	81G 80G 59G 57G 56G 55G 54G 53G 52G 51G 70G 89G 87G 87G 86G 85G 84G 83G 82G	75G 74G 73G 72G 71G 80G 79G 78G 77G 76G		M40 WIRE TO WIRE	WHITE			51 41 3	100 80	21J 20J 19J 18J 17J 16J 15J 14J 30J 29J 28J 27J 26J 25J 24J		41.1 40.1 39.1 38.1 37.1 36.1 35.1 34.1 50.1 49.1 48.1 47.1 46.1 45.1 44.1	61.1 60.1 59.1 58.1 57.1 56.1 55.1 54.1 70.1 69.1 68.1 67.1 66.1 65.1 64.1	75J 74J 73J 72J 80J 79J 78J 77J		_	
Connector No.	Connector Color WHITE				216 2		4164	616			Connector No.	Connector Color					217	: 	417	617				
Connec	Connec			H.S.		L					Conne	Conne			H.S.			L]				
																					ABNIA009	92GB		

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Connector No.). E5	
Connector Name		WIRE TO WIRE
Connector Color	olor WHITE	ITE
	2 3 4	5 6 6 7 8 9 10 11
H.S. 12	13 14 15	12 13 14 15 16 17 18 19 20 21 22 23 24
Terminal No.	Color of Wire	Signal Name
13	В	ı

Signal Name	ı	I	1	I	_	ı
Color of Wire	Υ	LG/B	GR	FIG	0	Ь
Terminal No. Wire	22C	23C	38C	39C	40C	41C

Connector No.	M116
Connector Name	Connector Name SONAR SYSTEM OFF SWITCH
Connector Color GRAY	GRAY
画 H.S.	[6 5 4 3 2 1
Color o	Color of Signal Name

Signal Name	I	ı	ı	1	
Color of Wire	ЫL	В	ВВ/У	В	
Terminal No. Wire	ļ	2	5	9	

r No. E41	r Name WIRE TO WIRE	r Color GRAY		1C 2C 3C 4C 5C	6C 7C 8C 9C 11C	12C 13C 14C 15C 16C 17C 18C 19C 20C 21C	220 230 240 250 260 270 280 290 300 310	32C 33C 34C 35C 36C 37C 38C 39C 40C 41C	42C 43C 44C 45C 46C 47C	49C 50C 51C 52C
Connector No.	Connector Name	Connector Color (D1	ပ္ဖ	120 130 1	2202302	320 330 3	42C 43C	48C

M73	Connector Name BACK-UP LAMP RELAY	or BROWN	
Connector No.	Connector Nam	Connector Color BROWN	

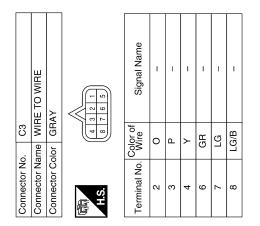
Signal Name	I	ı	I	ſ	I	I
Color of Wire	ŋ	æ	ŋ	G/W	M/B	Y/R
Terminal No.	-	2	က	2	9	7

10	WIRE TO WIRE	WHITE	9 3 2 1	,	Signal Name	I	I	ſ	I	I	_	-
. E35			5 4 11 10	:	Color of Wire	GR	LG	0	Ъ	>	LG/B	G/W
Connector No.	Connector Name	Connector Color	暨	H.S.	Terminal No.	9	7	8	6	10	11	12

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					A
Signal Name	ı	1	ı	F502 TCM (TRANSMISSION CONTROL MODULE) GRAY Is 7 6 5 4 3 2 1 1 Store Signal Name REV LAMP RLY	E
Color of Wire	ŋ	G/W	æ		
Terminal No.	51	2G	14G	Connector No. Connector Name Connector Color Terminal No. Color 7 F	Е
					F
				16 26 36 46 56 105	(
TO WIRE	Э Э			16 26 30 46 56 66 76 86 97 106 66 77 86 99 106 6 77 86 99 106 6 77 86 99 106 6 77 86 99 106 6 77 86 97 89 89 89 89 89 89 89 89 89 89 89 89 89	ı
Connector No. E152 Connector Name WIRE TO WIRE	Color WHITE			16 26 36 4 6 7 6 6 7 6 6 7 6 6	
Connector No.	Connector Color		E	Connector No. Connector Name Connector Color Terminal No. Color 13 13	
TELL	POWER DISTRIBUTION	AINE ROOM)		Signal Name REVERSE LAMP Signal Name Signal Name Signal Name	
19 'NI' A'A MC	WER DIST	JUULE EIN	MHII H	Proof Signa AT ASSEMBI GREEN Signa S	ı
		-	\neg	O. Color of Green	S
Connector No.	Connector Name		Connector Color	16 16 14 13 12 11 15 14 13 12 11 15 14 13 12 11 15 14 13 12 11 15 14 13 12 11 15 14 13 12 11 15 14 13 12 11 15 14 13 12 11 15 14 13 12 11 15 14 13 12 11 15 14 13 12 14 13 12 14 13 12 14 13 12 14 13 13 14 14 14 15 14 13 15 14 13 15 14 13 15 14 13 15 14 13 15 14 13 15 14 13 15 14 13 15 14 15 15 15 15 15 15	
				ABNIA0094GB	

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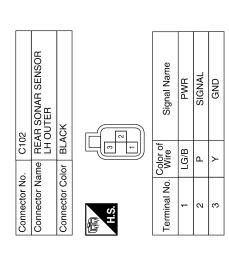
	33	REAR SONAR SENSOR LH INNER	BLACK		Signal Name	PWR
	. C103				Color of Wire	LG/B
	Connector No.	Connector Name	Connector Color	H.S.	Terminal No.	1

SIGNAL

0

0 0

Signal Name	_	ı	ı	I	I	_
Color of Wire	Υ	LG/B	GR	re	0	Ь
Terminal No. Wire	22C	23C	38C	39C	40C	41C



01	WIRE TO WIRE	AY	2 0 0 7 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Signal Name	ı	I	ı	ı	ı	I
		lor GRAY		Color of Wire	0	Ь	\	GR	LG	LG/B
Connector No.	Connector Name	Connector Color	是 H.S.	Terminal No.	2	က	4	9	7	80

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< ECU DIAGNOSIS >

	WIRE TO WIRE	ТЕ		3	Signal Name	-	_	-	_	_	_	_
B41		or WHITE		6 7 2	Color of Wire	GR	P	0	Ъ	>	LG/B	G/W
Connector No.	Connector Name	Connector Color	4	H.S.	Terminal No.	9	2	8	6	10	=	12

	B41	WIRE
	Connector No.	Connector Name

PWR SIGNAL GND

0 0

Signal Name	SENSOR SIGNAL ROR	SENSOR SIGNAL ROL	SENSOR SIGNAL RIL	SENSOR SIGNAL RIR	ON/OFF SWITCH	1	REAR SENSOR GND	REAR SENSOR PWR	
Color of Wire	GR	Ь	0	ГG	PT	ı	У	LG/B	
Terminal No.	6	10	11	12	13	14	15	16	

C105	Connector Name REAR SONAR SENSO RH OUTER	BLACK
Connector No.	Connector Name	Connector Color

Connector Name REAR SONAR SENSOR RH INNER

C104

Connector No.

BLACK

Connector Color



Signal Name	PWR	SIGNAL	GND
Color of Wire	LG/B	PI	У
Terminal No.	-	2	3

Signal Name

Color of Wire LG/B GR

Terminal No.

	Connector Name SONAR CONTROL UNIT	ш	13 12 11 10 9	Signal Name	1	1
B24	me SONA	or WHIT	8 7 6 5 4 3 12 11 11 12 12 11 11 11 12 12 11 11 11	Color of Wire	I	ı
Connector No.	Connector Na	Connector Color WHITE	H.S.	Terminal No.	-	2

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REVERSE LAMP SIGNAL

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G/R

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STATUS LED -

BR/Y G/W

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SOUNDER

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COLLINECTO NO.		503		Terminal No. Wire	Wire	Signal Name
Connector Name	ame	WIRE TO WIRE				S
Connector Color		WHITE		57J	œ	1
	- 1 - 1			65J	_	ı
E			_	C29	G/R	ı
S I		11 21 31 41 51		689	re	ı
		61 73 84 94 100		P69	BR/Y	1
	=	71.1 12.1 13.1 14.1 15.1 16.1 17.1 18.1 19.1 20.1 21.1 22.1 23.1 24.1 25.1 26.1 27.1 28.1 29.1 30.1				
	31)	31.1 32.1 33.1 34.1 35.1 36.1 37.1 38.1 39.1 40.1 41.1 42.1 43.1 44.1 45.1 46.1 47.1 48.1 48.1 50.1				
	51.7	51.1 52.1 53.1 54.1 55.1 56.1 57.1 58.1 59.1 60.1 61.1 62.1 63.1 63.1 64.1 65.1 65.1 68.1 69.1 70.1				
		71.1 72.1 73.3 74.1 75.1 76.1 77.1 78.1 79.1 80.1				

ABNIA0097GB

< ECU DIAGNOSIS >

DTC Index (INFOID-000000004916582

Fault Code	Malfunction	Service Procedure
11	Rear sonar sensor LH outer	Check harness for open or short.
12	Rear sonar sensor LH inner	Replace sonar sensor. Refer to <u>SN-48, "Removal and Installation".</u>
13	Rear sonar sensor RH inner	· · · · · · · · · · · · · · · · · · ·
14	Rear sonar sensor RH outer	
21	Sonar buzzer	 Refer to <u>SN-19. "Component Inspection"</u>. Check harness for open or short. Refer to <u>SN-45. "Symptom Table"</u>.
22	Sonar system OFF indicator	Refer to SN-21, "Component Inspection".
23	Sonar system OFF switch	 Check harness for open or short. Refer to symptom table.
24	Sonar control unit	Replace sonar control unit. Refer to <u>SN-49</u> , "Removal and Installation".

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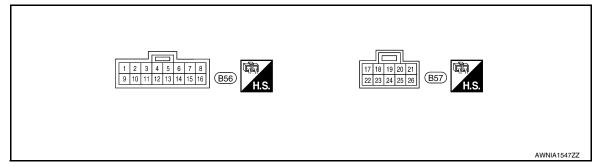
SONAR CONTROL UNIT FOR FRONT AND REAR SONAR SYSTEM

< ECU DIAGNOSIS >

SONAR CONTROL UNIT FOR FRONT AND REAR SONAR SYSTEM

Reference Value

SONAR CONTROL UNIT HARNESS TERMINAL LAYOUT



TERMINALS AND REFERENCE VALUES FOR SONAR CONTROL UNIT

Terminal			Condition		Reference value (V) (Approx.)	
(color)	Item	Ignition switch	Operation	n		
1 (G/R)	Sonar control unit power	ON	_		Battery voltage	
2 (L)	Sonar buzzer drive signal	ON	Object sensed		Battery voltage	
2 (0 (14))	Doverse signal	ON	Transmission gear selector tion	or lever in R posi-	Battery voltage	
3 (G/W)	Reverse signal	ON	Transmission gear selector position	or lever not in R	0	
4 (B)	Sonar control unit ground	_	_		_	
5 (BR/Y)	Sonar system OFF	ON	Sonar system OFF ON		0	
3 (BK/T)	indicator output	ON	switch	OFF	Battery voltage	
6 (R)	Rear sonar buzzer return	ON	_		0 - 12 (variable)	
8 (G/W)	K-line	ON	_		_	
9 (LG/B)	Rear sonar sensor power	ON	Ignition switch ON		Battery voltage	
11 (LG)	Sonar system OFF	ON	Sonar system OFF ON		0	
(==)	switch signal		switch OFF		Battery voltage	
12 (Y)	Rear sonar sensor ground	ON	_		_	
13 (LG)	Rear sonar sensor signal - RH inner	ON	Sonar system OFF switch ON Transmission gear selector lever in R position Distance obstacles		Battery voltage	
14 (O)	Rear sonar sensor signal - LH inner	ON	Sonar system OFF switch ON Transmission gear selector lever in R position Distance obstacles		Battery voltage	
15 (P)	Rear sonar sensor signal - LH outer	ON	Sonar system OFF switch ON Transmission gear selector lever in R position No obstacles		Battery voltage	

SONAR CONTROL UNIT FOR FRONT AND REAR SONAR SYSTEM

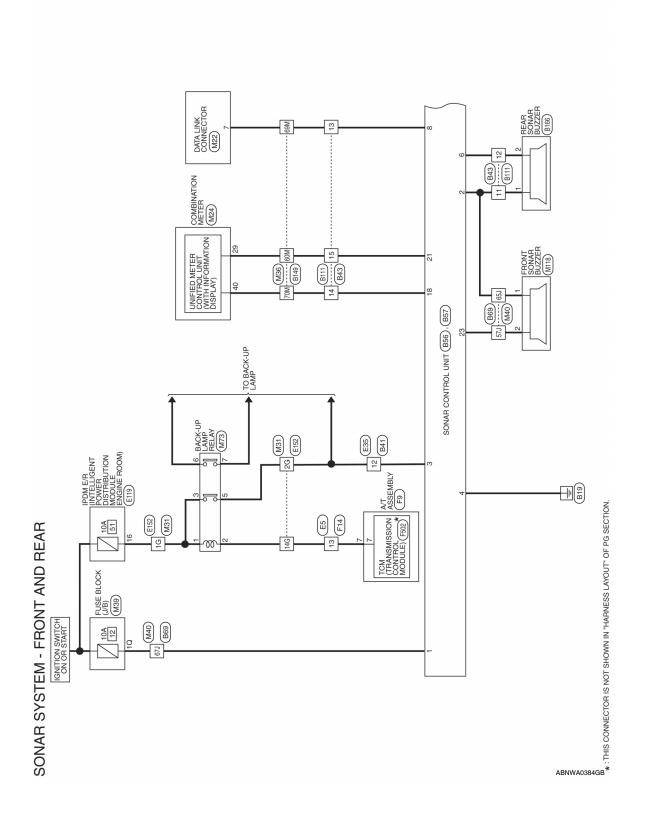
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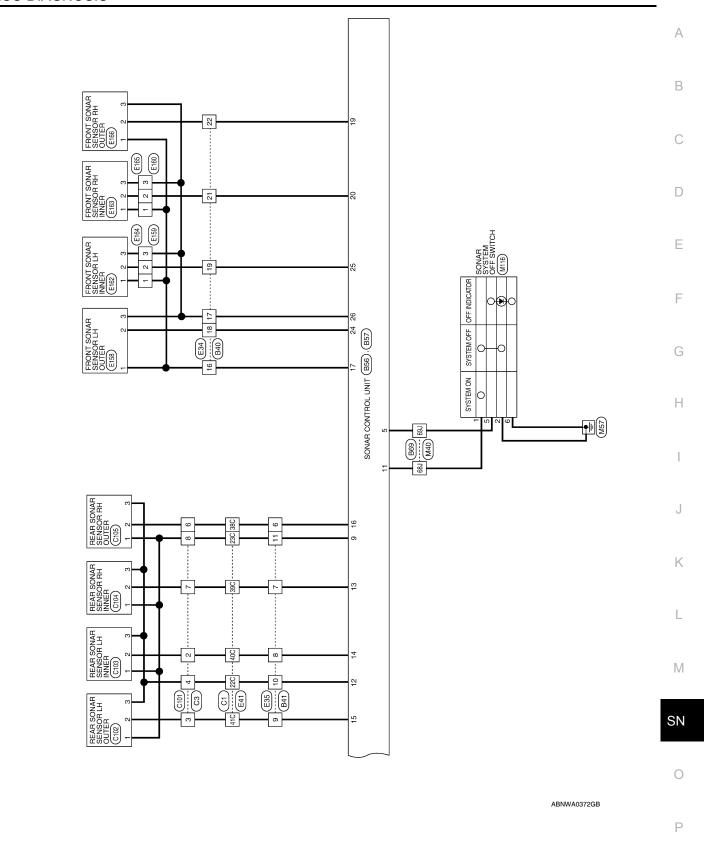
Terminal			Condition	Reference value (V)
(color)	Item	Ignition switch	Operation	(Approx.)
16 (GR)	Rear sonar sensor signal - RH outer	ON	Sonar system OFF switch ON Transmission gear selector lever in R position No obstacles	Battery voltage
17 (LG/B)	Front sonar sensor power	ON	Ignition switch ON	Battery voltage
18 (GR/R)	Park position signal	ON	Vehicle in PARK	12
19 (GR)	Front sonar sensor signal - RH outer	ON	Sonar system OFF switch ON Transmission gear selector lever in a forward drive gear Distance obstacles	Battery voltage
20 (LG)	Front sonar sensor signal - RH inner	ON	Sonar system OFF switch ON Transmission gear selector lever in reverse or a forward drive gear No obstacles	Battery voltage
21 (W/R)	Vehicle speed signal	ON	Speedometer operated [When vehicle speed is approx. 40 km/h (25 MPH)]	NOTE: Maximum voltage may be 12V due to specifications (connected units). (V) 6 4 2 0 PKIC0643E
23 (R)	Front sonar buzzer return	ON	_	0 - 12 (variable)
24 (P)	Front sonar sensor signal - LH outer	ON	Sonar system OFF switch ON Transmission gear selector lever in reverse or a forward drive gear No obstacles	Battery voltage
25 (O)	Front sonar sensor signal - LH inner	ON	Sonar system OFF switch ON Transmission gear selector lever in a forward drive gear Distance obstacles	Battery voltage
26 (Y)	Front sonar sensor ground	ON	_	_

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Wiring Diagram





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SONAR SYSTEM CONNECTORS - FRONT AND REAR

23 22 21 23 22 21	Connector No. M39 Connector Color PUSE BLOCK (J/B) Connector Color WHITE Solor of Signal Name 1Q G/R -	
M24 COMBINATION METER WHITE 17 16 15 14 13 12 11 10 10 8 17 16 15 15 15 14 13 12 11 10 10 8 17 16 15 15 15 15 15 15 15 15 15 15 15 15 15	Connector No. M36	Terminal No. Color of Wire Signal Name 60M W/R - 69M G/W - 70M GR/R -
Connector No. M22	Connector No. M31	Terminal No. Color of Signal Name 1G G Color of Signal Name 1G G Color of Col

< ECU DIAGNOSIS >

Connector No. M73 Connector Name BACK-UP LAMP RELAY	Connector Color BROWN				8 9	Solor of	Terminal No. Wire Signal Name	1 G –	2 B –	о Э		6 W/B – 7 Y/R –	Connector No. E5		Connector Color WHITE	1 2 3 4 5 6	S S S	ا تع					E	A B C
Conn	Conn		E	S F			Termi						Conn	Conn		原即 H.S.	Term						E	Ε
]																	F	F
Signal Name	ı	1	ı	ı	ı									Connector Name FRONT SONAR BUZZER		45	Signal Name	ı	1					G
or of re			Œ	(J	<u>\</u>								M118	FRONT S	באכא		Color of Wire		а				ŀ	Н
l No. Color of Wire	Ж	_	G/R	P	BR/Y									Connector Name FRONT	5	H.S.								
Terminal No.	57J	65)	P29	687	P69								Connector No.	Connect			Terminal No.	-	2					J
		_						_	1					T		٦							ŀ	K
VIRE				ત્ર i	20 77	21J 20J 19J 18J 17J 16J 15J 14J 13J 12J 11J	250 Z50 Z40 Z50 Z50	41.1 40.1 39.1 38.1 37.1 36.1 35.1 34.1 33.1 32.1 31.1	771 764 764 764 764	61) 601 59J 58J 57J 56J 55J 54J 53J 52J 51J	050 050 050 050 050 050 050	75J 74J 73J 72J 71J		YSTEM CH		2 1	Signal Name	ı	1	ı	ı		L	L
M40 WIRE TO WIRE	WHITE			51 4	100	90 180 170 1	20 Z80 Z70 Z	39J 38J 37J 3	407 4470 4	59, 58, 57, 5		75J 74J	M116	SONAR SYSTEM OFF SWITCH	GRAY	6 5 4 3							N	M
						21, 20, 1	200	41.0 40.0 3	r nne	61,0 60,5	0/0/				+-		Color of Wire	LG	В	BR/Y	В		SI	18
Connector No.	Connector Color		E	VI.									Connector No.	Connector Name	Connector Color	E SH	Terminal No.	-	2	2	9		(C
																						ABNIA0099GB		

Connector No.	E119	
Connector Name		IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color WHITE	lor WHI	TE
H.S.	9 8 7	9 8 7 6 6 5 4 3
Terminal No. Wire	Color of Wire	Signal Name
16	5	REVERSE LAMP

											Г
	WIRE TO WIRE	WHITE	10 9 8 7 6	Signal Name	1	I	ı	ı	ı	I	1
. E35			5 4 11 11	Color of Wire	GR	LG	0	Ь	Y	LG/B	W/U
Connector No.	Connector Name	Connector Color	赋 H.S.	Terminal No.	9	7	8	6	10	11	12

Signal Name	_	1	I	_	_	1
Color of Wire	٨	LG/B	GR	ГG	0	۵
Terminal No.	22C	23C	38C	39C	40C	41C

Connector Name WIRE TO WIRE Connector Color WHITE Til 10 9 8 7 6 4 3 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Connector No.	<u>.</u>	_	E34	4									
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Signal Name	ı	ı	I	ı	I	_
Color of Wire	LG/B	\	Ь	0	PT	GR
Terminal No. Wire	16	17	18	19	21	22

No. E41	Name WIRE TO WIRE	Color GRAY		1C 2C 3C 4C 5C	6C 7C 8C 9C 10C 11C	120 130 140 150 160 170 180 190 200 210	220 230 240 250 260 270 280 290 300 310	320 330 340 350 360 370 380 390 400 410	42C 43C 44C 45C 46C 47C	48C 49C 50C 51C 52C
tor No.	tor Name	tor Color								==



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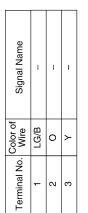
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E158 FRONT SONAR SENSOR BLACK Signal Name B PWR B PWR GND GND	FRONT SONAR SENSOR LH INNER BLACK ar of Signal Name re Signal Name RB PWR SIGNAL GND	С
		D
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		F
Signal Name	O WIRE Signal Name	G
Color of G G G G G G G G G G G G G G G G G G	Connector No. E160 Connector Name WIRE TO WIRE Connector Color GRAY Terminal No. Wire 1 LG/B 2 LG 3 Y	I
Terminal No. 16 26 14G	Connector No. Connector Name Connector Color H.S. Terminal No. Color 2 LC	J
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	Connector No. E164	Connector No. E165	E165
	connector Name WIRE TO WIRE	Connector Name WIRE TO WIRE	WIRE TO WIRE
	Connector Color GRAY	Connector Color GRAY	GRAY
_	1 2 3	SH	

	_		
Signal Name	I	I	I
Color of Wire	LG/B	ГG	Υ
Terminal No.	-	2	3





Connector Color WHITE	H.S.	Terminal No.	13
olor WH	11 10 9 8 24 23 22 21 2	Color of Wire	ш
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	r ASSEMBLY	GREEN	4 6 8 7 2 5 1 8 4 9 4 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9
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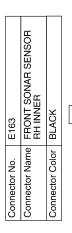
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() () () () () () () () () ()	Signal Name	ı
4 6 0	Color of Wire	œ
山山 H.S.	Terminal No.	2

9	FRONT SONAR SENSOR RH OUTER	CK		Signal Name	PWR	SIGNAL	GND
. E166		lor BLACK		Color of Wire	LG/B	re	>
Connector No.	Connector Name	Connector Color	原列 H.S.	Terminal No.	-	2	ဗ

		30,100	
K LG/B		Wire	Sign
57 ×	-	LG/B	
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Color of Wire	LG/B	ГG	Υ
Terminal No.	1	2	3

Signal Name

PWR SIGNAL GND

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5	REAR SONAR SENSOR RH OUTER	CK		Signal Name	PWR	SIGNAL	GND
C105		or BLACK		Color of Wire	LG/B	GR	>
Connector No.	Connector Name	Connector Color	H.S.	Terminal No.	-	2	e e
C104	REAR SONAR SENSOR RH INNER	BLACK	© 1	of Signal Name	PWR	SIGNAL	GND
				Color of Wire	LG/B	LG	>
Connector No.	Connector Name	Connector Color	原动 H.S.	Terminal No.	-	2	က
			l		<u> </u>		
03	REAR SONAR SENSOR LH INNER	BLACK	2 0 1	Signal Name	PWR	SIGNAL	GND
). C103		lor BL		Color of Wire	LG/B	0	>
Connector No.	Connector Name	Connector Color	原 H.S.	Terminal No.	-	2	က

Connector No. B43	Connector Name WIRE TO WIRE	Connector Color WHITE	7 6 5 4 3 2 1	H.S.	Terminal No. Wire Signal Name	11	12 R –	13 G/W –	14 GR/R –	15 W/R –		
	E TO WIRE	E E	4 5	9 10 11 12	Signal Name	1	ı	ı	1	ı	1	
Connector No. B41	Connector Name WIRE TO WIRE	Connector Color WHITE	I I⊢	6 7 8 9 10 11 12	Terminal No. Color of Signal Name	GR -	- B1	0	- L	\ \	LG/B –	_

	WIRE TO WIRE	111		5 6 7 8 9 10 11 16 17 18 19 20 21 22 23 24	Signal Name	_	-	_	_	_	_
B40		lor	1 1	1 2 3 4 12 13 14 15	Color of Wire	LG/B	\	Ь	0	ГG	GR
Connector No.	Connector Name	Connector Color WHITE		Si	Terminal No.	91	41	18	19	21	22

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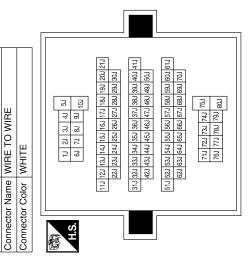
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7	SONAR CONTROL UNIT	GRAY	19 20 21	Signal Name	POWER	PARK-POS	FOR	HH	VEHICLE_SPEED	ı	FR_SOUNDER(-)	FOL	FIL	GND		B111	WIRE TO WIRE	WHITE	4 5 6 7
720		+	17 18	Color of Wire	LG/B	GR/R	GR	2	W/B	,	~	۵	0	Υ					1 0
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Signal Name	LED_STATUS	RR_SOUNDER (-)	ı	K-LINE	PWR	ı	DISABLE_SW	GND	RIR	RIL	ROL	ROR
Color of Wire	BR/Y	Ж	ı	G/W	LG/B	1	FG	>	FG	0	Ь	GR
erminal No.	2	9	7	8	6	10	=	12	13	14	15	16

	SONAR CONTROL UNIT	,	4 5 6 7 8 12 13 14 15 16	Signal Name	NÐI	RR_SOUNDER (+)	REVERSE_LAMP_SIG	GND
B26		r GRAY	2 3 4 10 11 12	Color of Wire	G/R	_	G/W	В
Connector No.	Connector Name	Connector Color	明 H.S.	Terminal No.	-	2	3	4
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Connector No.	2 2 - 8 B	WHITE WHITE WHITE 3 4 5 6 7 10 11 12 13 14 15 16 15 15 14 15 16 15 15 15 15 15 15
Terminal No.	Color of Wire	Signal Name
11	_	ı
12	Œ	ı
13	G/W	ı
14	GR/R	ı
15	W/R	ı

Signal Name	_	I	1	_	_
Color of Wire	н	_	G/R	ГG	BR/Y
Terminal No. Wire	57J	657	P29	681	Ր69



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Connector No.

99	REAR SONAR BUZZER	BLACK		of Signal Name	ı	
. B166			<u> </u>	Color of Wire	_	
Connector No.	Connector Name	Connector Color	是 H.S.	Terminal No.	-	

Connector No. B149
Connector Name WIRE TO WIRE
Connector Color WHITE

1M 2M 3M 4M 5M 5M 10M 10M	STM SEM SEM
H.S.	

Signal Name	1	I	1
Color of Wire	W/R	G/W	GR/R
Terminal No.	M09	M69	70M

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< ECU DIAGNOSIS >

DTC Index

DTC	Malfunction	Service Procedure
B2700	Front sonar sensor LH outer	Replace sonar sensor. Refer to <u>SN-48</u> , "Removal and Installation".
B2701	Front sonar sensor LH outer harness	Check harness for open or short. Refer to <u>SN-16</u> , " <u>Diagnosis Procedure</u> (With Front and Rear Sonar System)". Replace sonar sensor. Refer to <u>SN-48</u> , " <u>Removal and Installation</u> ".
B2702	Front sonar sensor RH outer	Replace sonar sensor. Refer to <u>SN-48</u> , "Removal and Installation".
B2703	Front sonar sensor RH outer harness	Check harness for open or short. Refer to <u>SN-16</u> , " <u>Diagnosis Procedure (With Front and Rear Sonar System)</u> ". Replace sonar sensor. Refer to <u>SN-48</u> , "Removal and Installation".
B2704	Rear sonar sensor LH outer	Replace sonar sensor. Refer to SN-48, "Removal and Installation".
B2705	Rear sonar sensor LH outer harness	 Check harness for open or short. Refer to <u>SN-16</u>, "<u>Diagnosis Procedure (With Front and Rear Sonar System)</u>". Replace sonar sensor. Refer to <u>SN-48</u>, "<u>Removal and Installation</u>".
B2706	Rear sonar sensor RH outer	Replace sonar sensor. Refer to <u>SN-48</u> , "Removal and Installation".
B2707	Rear sonar sensor RH outer harness	Check harness for open or short. Refer to <u>SN-16</u> , " <u>Diagnosis Procedure (With Front and Rear Sonar System)</u> ". Replace sonar sensor. Refer to <u>SN-48</u> , " <u>Removal and Installation</u> ".
B2708	Rear sonar sensor LH inner	Replace sonar sensor. Refer to <u>SN-48</u> , "Removal and Installation".
B2709	Rear sonar sensor LH inner harness	Check harness for open or short. Refer to <u>SN-16</u> , " <u>Diagnosis Procedure (With Front and Rear Sonar System)</u> ". Replace sonar sensor. Refer to <u>SN-48</u> , "Removal and Installation".
B270A	Rear sonar sensor RH inner	Replace sonar sensor. Refer to <u>SN-48</u> , "Removal and Installation".
B270B	Rear sonar sensor RH inner harness	Check harness for open or short. Refer to <u>SN-16</u> , " <u>Diagnosis Procedure (With Front and Rear Sonar System)</u> ". Replace sonar sensor. Refer to <u>SN-48</u> , " <u>Removal and Installation</u> ".
B270C	Front sonar sensor LH inner	Replace sonar sensor. Refer to <u>SN-48</u> , "Removal and Installation".
B270D	Front sonar sensor LH inner harness	Check harness for open or short. Refer to <u>SN-16</u> , " <u>Diagnosis Procedure</u> (With Front and Rear Sonar System)". Replace sonar sensor. Refer to <u>SN-48</u> , "Removal and Installation".
B270E	Front sonar sensor RH inner	Replace sonar sensor. Refer to <u>SN-48</u> , "Removal and Installation".
B270F	Front sonar sensor RH inner harness	Check harness for open or short. Refer to <u>SN-16</u> , " <u>Diagnosis Procedure</u> (With Front and Rear Sonar System)". Replace sonar sensor. Refer to <u>SN-48</u> , " <u>Removal and Installation</u> ".

SONAR SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

SONAR SYSTEM SYMPTOMS

Symptom Table

Symptom	Repair order				
When the sonar system is OFF, the OFF indicator does not light and the sonar buzzer does not sound.	Check sonar system OFF switch. Refer to SN-21, "Component Inspection". Check harness and connections for sonar system OFF switch. Replace sonar control unit. Refer to SN-49, "Removal and Installation".				
When the sonar system is OFF, the OFF indicator lamp does not light but the sonar buzzer does sound.	 Check sonar system OFF indicator lamp. Refer to SN-21, "Component Inspection". Check harness and connections for sonar system OFF indicator lamp. Replace sonar control unit. 				
When the sonar system is OFF, the sonar buzzer does not sound but the OFF indicator lamp lights.	Check sonar buzzer. Refer to SN-19, "Component Inspection". Check harness and connections between sonar buzzer and sonar control unit. Replace sonar control unit.				
When sonar system is ON, the sonar system OFF indicator lamp lights up and the sonar buzzer sounds intermittently (for about 4 seconds). (Rear sonar system only)	 Check harnesses between sonar sensors and sonar control unit for an open condition. Check sonar sensors. Refer to <u>SN-6</u>, "<u>Preliminary Check</u>". Replace sonar control unit. 				
The sonar system still operates when the sonar system is OFF.	Replace sonar control unit.				
When the transmission gear selector lever is in the R position and the sonar system is ON, the rear sonar system does not operate.	Check transmission range switch. Refer to TM-45, "Diagnosis Procedure". Check back-up lamp relay. Check related harness and connections for back-up lamp relay. Replace sonar control unit.				
When the transmission gear selector lever is in a forward drive gear and the sonar system is ON, the front sonar system does not operate. (With front and rear sonar system only)	 Check harness and connections between sonar control unit and combination meter. Replace sonar control unit. 				
Sonar system OFF indicator lamp lights up and buzzer sounds although there are no obstacles within the detection range.	 Check sonar sensors. Check harness and connections between sonar sensors and sonar control unit. Replace sonar control unit. 				
The sonar sensors do not detect objects in the detectable range.	Check sonar sensors. Replace sonar control unit.				

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PRECAUTION

PRECAUTION

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

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

WARNING:

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

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

WARNING:

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

Necessary for Steering Wheel Rotation After Battery Disconnect

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NOTE:

- Before removing and installing any control units, first turn the push-button ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work.
 If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

This vehicle is equipped with a push-button ignition switch and a steering lock unit.

If the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

If turning the steering wheel is required with the battery disconnected or discharged, follow the procedure below before starting the repair operation.

OPERATION PROCEDURE

1. Connect both battery cables.

NOTE:

Supply power using jumper cables if battery is discharged.

- 2. Carry the Intelligent Key or insert it to the key slot and turn the push-button ignition switch to ACC position. (At this time, the steering lock will be released.)
- Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
- Perform the necessary repair operation.
- 5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the push-button ignition switch is turned to LOCK position.)

PRECAUTION

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Perform self-diagnosis check of all control units using CONSULT-III. Α В С D Е F G Н Κ L M SN

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SONAR SENSOR

< REMOVAL AND INSTALLATION >

REMOVAL AND INSTALLATION

SONAR SENSOR

Removal and Installation

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FRONT SONAR SENSOR

Removal

- 1. Remove the front fascia assembly. Refer to <a>EXT-13, "Removal and Installation".
- 2. Remove the front sonar sensor from the front fascia assembly.
- 3. Disconnect the front sonar sensor connector.
- 4. Remove the front sonar sensor housing from the front fascia assembly.

Installation

Installation is in the reverse order of removal.

REAR SONAR SENSOR

Removal

- Remove the rear fascia assembly. Refer to <u>EXT-15</u>, "Removal and Installation".
- 2. Remove the rear sonar sensor from the rear fascia assembly.
- Disconnect the rear sonar sensor connector.
- 4. Remove the rear sonar sensor housing from the rear fascia assembly.

Installation

Installation is in the reverse order of removal.

SONAR CONTROL UNIT

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SONAR CONTROL UNIT

Removal and Installation

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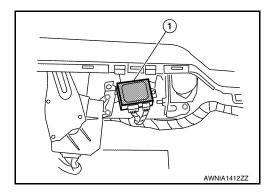
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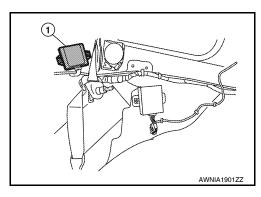
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Removal

- 1. Remove the luggage side finisher lower LH. Refer to INT-19, "Removal and Installation".
- 2. Disconnect the sonar control unit electrical connectors.
- 3. Remove the bolt, then remove the sonar control unit.
- Front and rear sonar control unit (1)



• Rear sonar control unit (1)



Installation

Installation is in the reverse order of removal.

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BUZZER

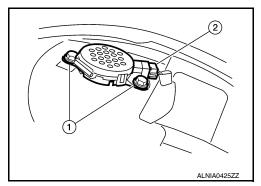
Removal and Installation

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FRONT BUZZER

Removal

- 1. Remove the instrument panel upper cover. Refer to IP-12, "Removal and Installation".
- 2. Remove the two bolts (1), disconnect the connector (2) and remove the front buzzer.



Installation

Installation is in the reverse order of removal.

REAR BUZZER

NOTE:

Rear buzzer location used only for vehicles equipped with both front and rear sonar systems.

Removal

- 1. Partially remove the rear headliner. Refer to INT-17, "Removal and Installation".
- 2. Release the buzzer from the bracket, disconnect the connector and remove the buzzer.

Installation

Installation is in the reverse order of removal.