

SECTION SN
SONAR SYSTEM

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 C
 D
 E
 F
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 H
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 J
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 L
 M
 SN
 O
 P

CONTENTS

PREPARATION	3	Diagnosis Procedure (With Rear Only Sonar System)	17
PREPARATION	3	Diagnosis Procedure (With Front and Rear Sonar System)	17
Commercial Service Tools	3	Component Inspection (With Front and Rear Sonar System)	18
BASIC INSPECTION	4	SONAR BUZZER CIRCUIT INSPECTION	20
DIAGNOSIS AND REPAIR WORKFLOW	4	Description	20
Work Flow	4	Component Function Check (With Front and Rear Sonar System)	20
INSPECTION AND ADJUSTMENT	6	Diagnosis Procedure (With Rear Only Sonar System)	20
Preliminary Check	6	Diagnosis Procedure (With Front and Rear Sonar System)	21
SYSTEM DESCRIPTION	7	Component Inspection	21
REAR ONLY SONAR SYSTEM	7	SONAR SYSTEM OFF SWITCH CIRCUIT INSPECTION	22
System Diagram	7	Description	22
System Description	7	Component Function Check (With Front and Rear Sonar System)	22
Component Parts Location	8	Diagnosis Procedure (With Rear Only Sonar System)	22
Component Description	8	Diagnosis Procedure (With Front and Rear Sonar System)	23
Self-Diagnosis Function	8	Component Inspection	24
FRONT AND REAR SONAR SYSTEM	11	ECU DIAGNOSIS INFORMATION	25
System Diagram	11	SONAR CONTROL UNIT FOR REAR ONLY SONAR SYSTEM	25
System Description	11	Reference Value	25
Component Parts Location	12	DTC Index	26
Component Description	13	SONAR CONTROL UNIT FOR FRONT AND REAR SONAR SYSTEM	27
CONSULT Function (SONAR)	13	Reference Value	27
DTC/CIRCUIT DIAGNOSIS	15	DTC Index	28
POWER SUPPLY AND GROUND CIRCUIT	15	WIRING DIAGRAM	30
Diagnosis Procedure (With Rear Only Sonar System)	15		
Diagnosis Procedure (With Front and Rear Sonar System)	15		
SONAR SENSOR CIRCUIT INSPECTION	17		
Description	17		
Component Function Check (With Front and Rear Sonar System)	17		

SONAR SYSTEM	30	Precaution Necessary for Steering Wheel Rotation After Battery Disconnect	50
Wiring Diagram - Rear	30		
Wiring Diagram - Front And Rear	37		
SYMPTOM DIAGNOSIS	48		
SONAR SYSTEM SYMPTOMS	48		
Symptom Table	48		
PRECAUTION	50		
PRECAUTION	50		
Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"	50		
		UNIT REMOVAL AND INSTALLATION	52
		SONAR SENSOR	52
		Removal and Installation	52
		SONAR CONTROL UNIT	53
		Removal and Installation	53
		BUZZER	54
		Removal and Installation	54

PREPARATION


< PREPARATION >

PREPARATION

PREPARATION

Commercial Service Tools

INFOID:000000008929099

Tool name	Description
<p data-bbox="162 409 284 441">Power tool</p>  <p data-bbox="852 630 933 651">PIIB1407E</p>	<p data-bbox="1063 409 1404 441">Loosening nuts, screws and bolts</p>

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K

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DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

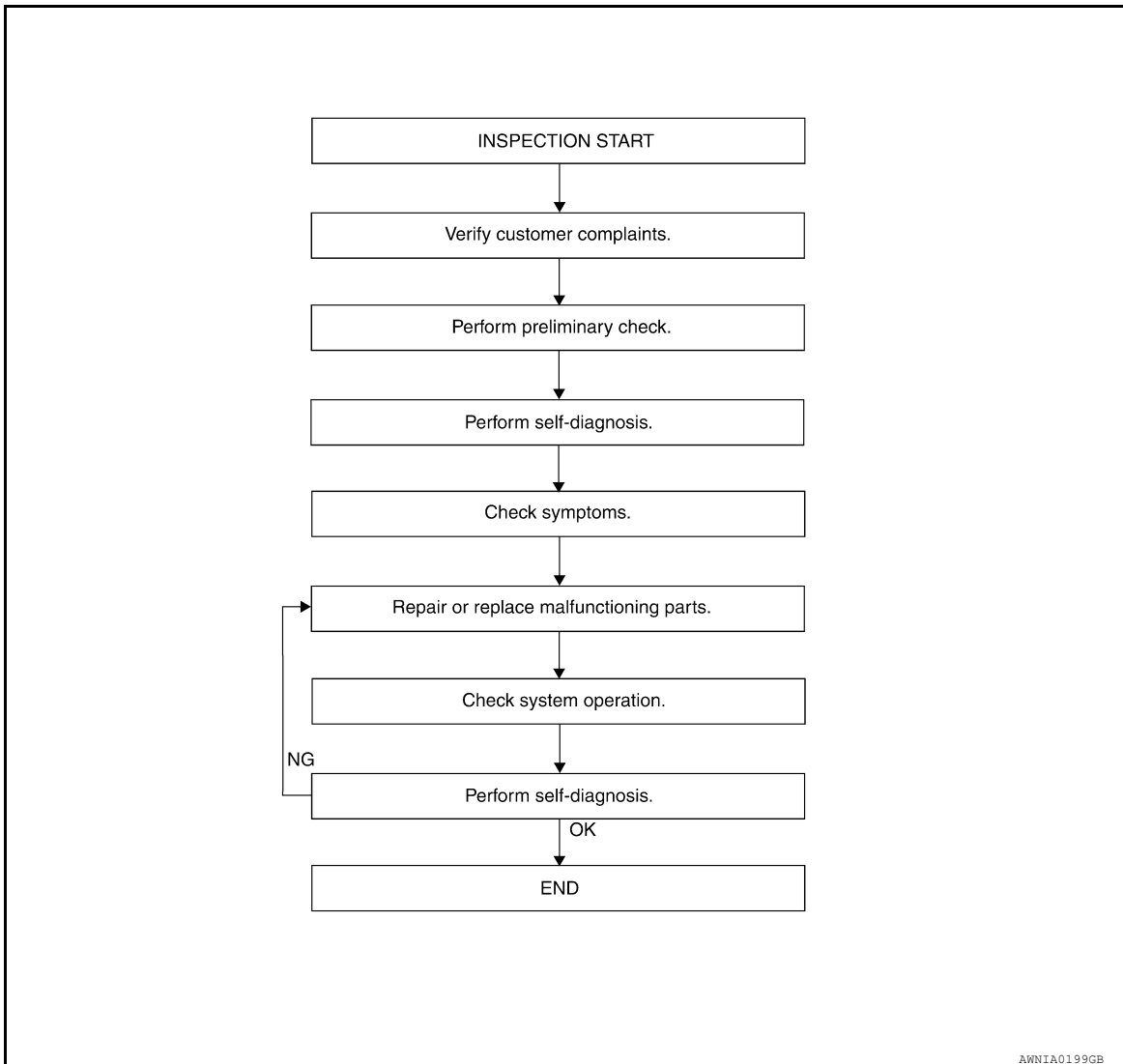
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000008633191

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 only sonar system) or [SN-13, "CONSULT Function \(SONAR\)"](#) (with front and rear sonar system).

>> GO TO 4

4.SYMPTOM

Check for symptoms. Refer to [SN-48, "Symptom Table"](#).

>> GO TO 5

5.MALFUNCTIONING PARTS

Repair or replace the applicable parts.

>> GO TO 6

6.SYSTEM OPERATION

Check system operation. Refer to [SN-6, "Preliminary Check"](#).

>> GO TO 7

7.SELF-DIAGNOSIS

Perform self-diagnosis. Refer to [SN-8, "Self-Diagnosis Function"](#) (with rear only sonar system) or [SN-13, "CONSULT Function \(SONAR\)"](#) (with front and rear sonar system).

Are any fault codes displayed?

YES >> GO TO 5

NO >> Inspection End.

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INSPECTION AND ADJUSTMENT

< BASIC INSPECTION >

INSPECTION AND ADJUSTMENT

Preliminary Check

INFOID:000000008633192

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. Inspect for the following:
 - Physical damage to wiring
 - Physical damage to harness connectors
 - Loose or disconnected harness connectors
 - Physical damage to system components
2. Check that there are no obstacles within each sonar sensor's detection range.

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

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

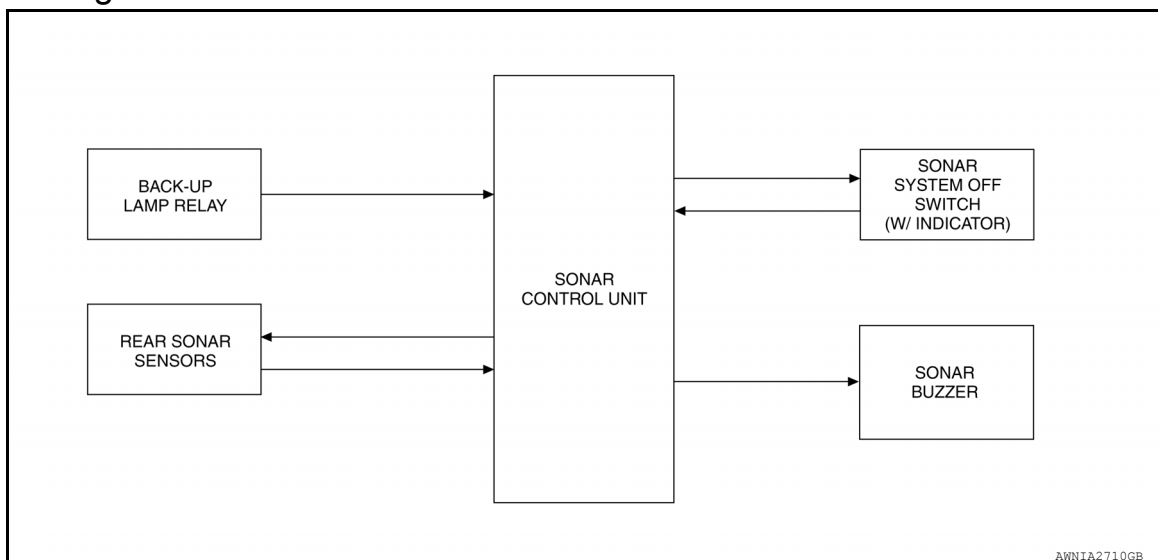
REAR ONLY SONAR SYSTEM

< SYSTEM DESCRIPTION >

SYSTEM DESCRIPTION

REAR ONLY SONAR SYSTEM

System Diagram



System Description

INFOID:000000008633194

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 sonar system OFF indicator to go out. If the sonar control unit detects a malfunction in the system it will turn off the sonar system and the indicator lamp will turn on.

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

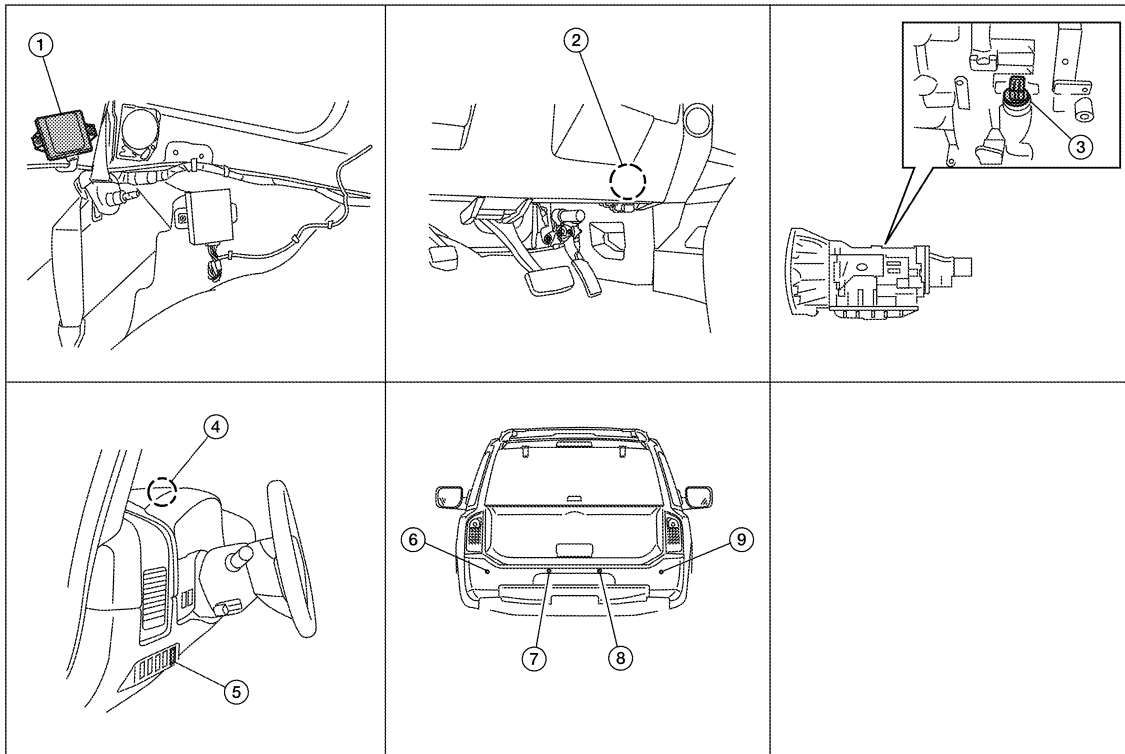
The back-up lamp relay provides a reverse signal to the sonar control unit.

REAR ONLY SONAR SYSTEM

< SYSTEM DESCRIPTION >

Component Parts Location

INFOID:000000008633195



AWNIA15882Z

- | | | |
|---|--|------------------------------------|
| 1. Sonar control unit B24
(view with luggage side finisher LH removed) | 2. Back-up lamp relay M73 | 3. A/T assembly F9 |
| 4. Sonar buzzer M47 | 5. Sonar system OFF switch M116
(with sonar system OFF indicator) | 6. Rear sonar sensor LH outer C102 |
| 7. Rear sonar sensor LH inner C103 | 8. Rear sonar sensor RH inner C104 | 9. Rear sonar sensor RH outer C105 |

Component Description

INFOID:000000008633196

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:000000008633197

NOTE:

Always perform Preliminary Check before running Self-Diagnosis Function. Refer to [SN-6. "Preliminary Check"](#).

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

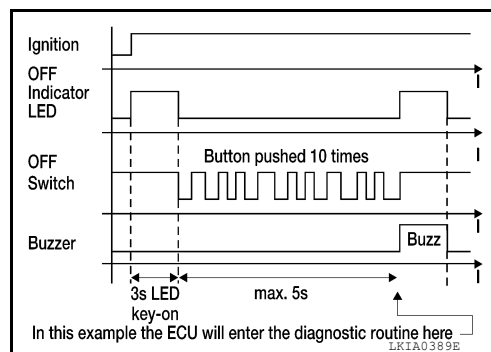
REAR ONLY SONAR SYSTEM

< SYSTEM DESCRIPTION >

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

1. 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 seconds.
3. The sonar buzzer will sound once and the sonar system OFF indicator will flash once.



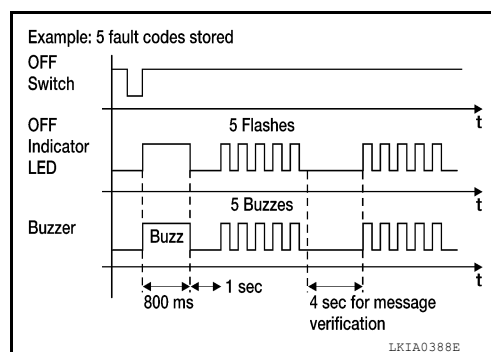
REQUESTING NUMBER OF FAULT CODES MODE

1. 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.

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

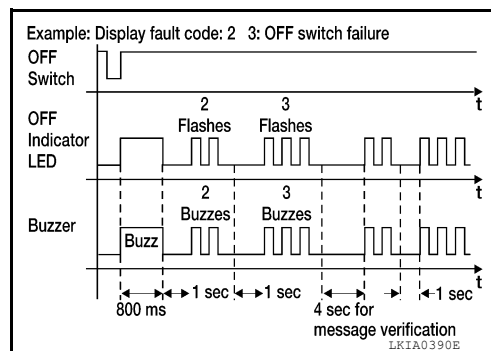


NOTE:

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

REQUESTING FAULT CODES MODE

1. While in "requesting number of fault codes" mode, push sonar system OFF switch once.
2. The sonar buzzer will sound once.
3. Sonar system OFF indicator will flash and sonar buzzer will sound the first digit of the fault code followed by a one second pause.
4. Sonar system OFF indicator will flash and sonar buzzer will sound the second digit of the fault code followed by a four seconds pause.
5. Each fault code will repeat five times then pause.
6. 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-26, "DTC Index"](#).

CLEARING FAULT CODES MODE

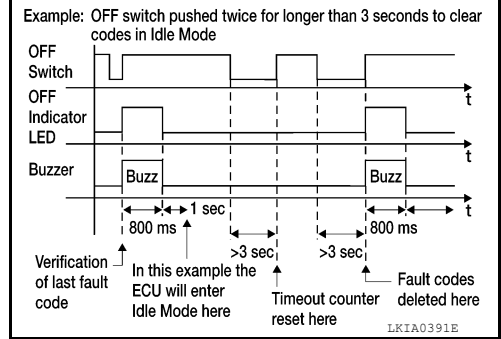
NOTE:

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

REAR ONLY SONAR SYSTEM

< SYSTEM DESCRIPTION >

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.

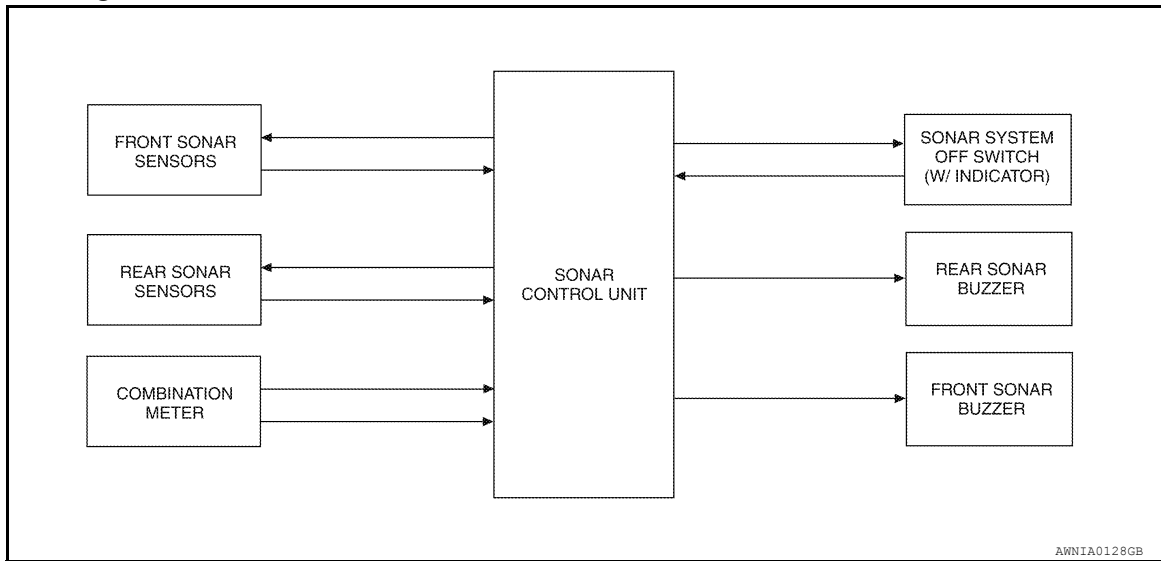


FRONT AND REAR SONAR SYSTEM

< SYSTEM DESCRIPTION >

FRONT AND REAR SONAR SYSTEM

System Diagram



System Description

INFOID:000000008633199

FUNCTION

FUNCTION WHILE MOVING IN REVERSE

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 within 0.5 m (1.64 ft.) of the two outer front sonar sensors. The vehicle operator is notified of obstacles by varied rate of tone from the rear or front sonar buzzers depending on location and distance of obstacle being sensed. If the vehicle speed reaches 50 km/h (31 MPH) in reverse the sonar system will shut down.

FUNCTION WHILE MOVING FORWARD

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. If the sonar control unit detects a malfunction in the front system, the front system will be disabled. If the sonar control unit detects a malfunction in the rear system, the rear system will be disabled. The indicator will flash when a malfunction exists in either system.

SONAR BUZZERS

FUNCTION WHILE MOVING IN REVERSE

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, causing the rear sonar buzzer to sound a tone. The two outer front sonar sensors will detect same size objects that are closer than 0.5 m (1.64 ft.) 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 25.0 cm (10 in.) from the rear or front bumper, the tone will sound continuously. Once the object starts moving away from the front outer sensors, the buzzer tone will stop even if the object is within 1.0 m (3.28 ft.).

FRONT AND REAR SONAR SYSTEM

< SYSTEM DESCRIPTION >

FUNCTION WHILE MOVING FORWARD

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 sonar sensors send information to the sonar control unit that represents the time from the transmitted signal to the time the signal is reflected back.

FRONT SONAR SENSORS

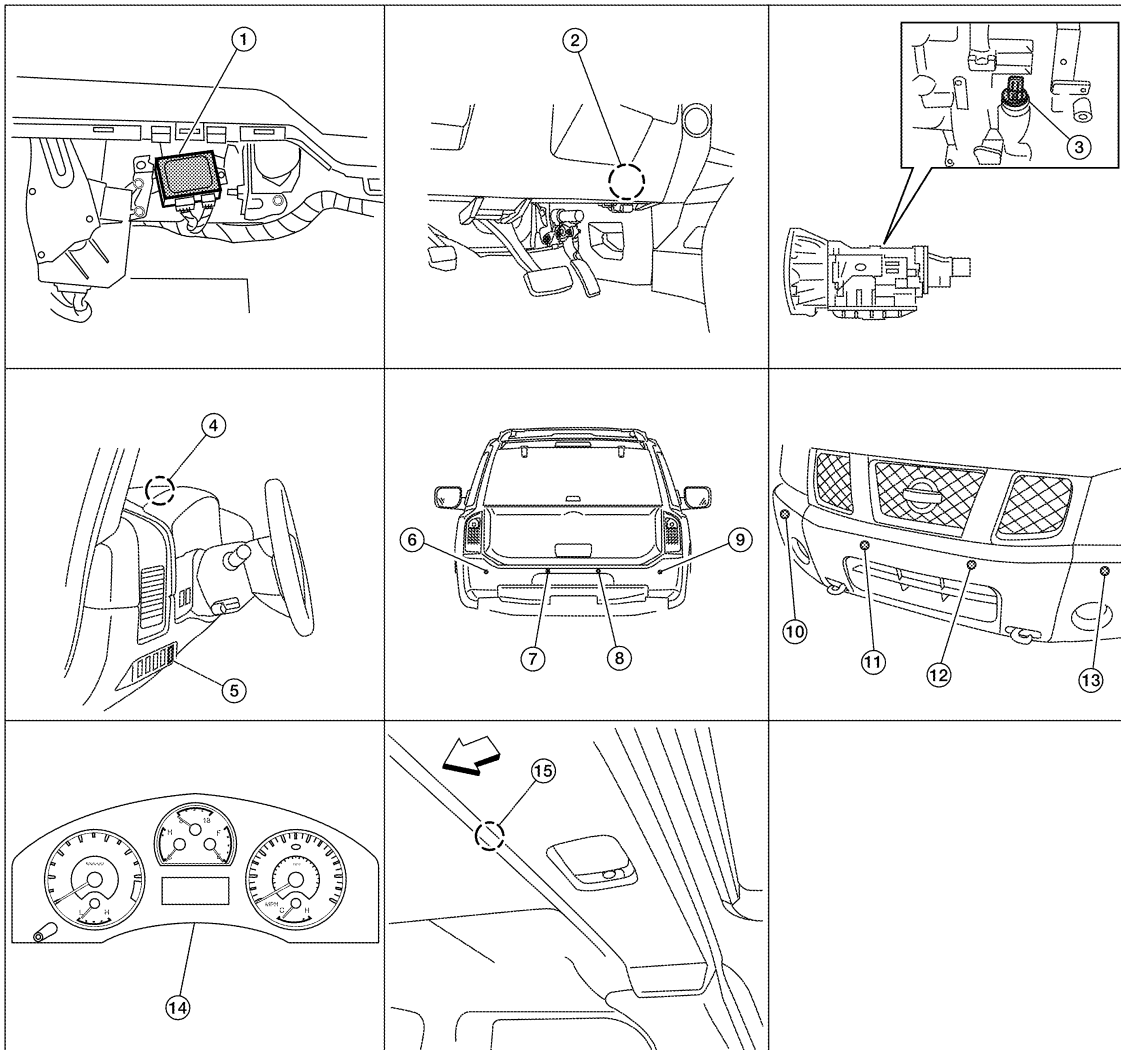
With power and ground supplied to the front sonar sensors, the sonar sensors transmit an ultrasonic signal. This signal is reflected back to the sensor by objects large enough and close enough to be detected. The front sonar sensors send information to the sonar control unit that represents the time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

COMBINATION METER

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

Component Parts Location

INFOID:000000008633200



AWNIA18542Z

FRONT AND REAR SONAR SYSTEM

< SYSTEM DESCRIPTION >

↩ Front

- | | | |
|--|--|--|
| 1. Sonar control unit B56, B57
(View with luggage side finisher LH removed) | 2. Back-up lamp relay M73 | 3. A/T assembly F9 |
| 4. Front sonar buzzer M118 | 5. Sonar system OFF switch M116
(with sonar system OFF indicator) | 6. Rear sonar sensor LH outer C102 |
| 7. Rear sonar sensor LH inner C103 | 8. Rear sonar sensor RH inner C104 | 9. Rear sonar sensor RH outer C105 |
| 10. Front sonar sensor RH outer E166 | 11. Front sonar sensor RH inner E163 | 12. Front sonar sensor LH inner E162 |
| 13. Front sonar sensor LH outer E158 | 14. Combination meter M24 | 15. Rear sonar buzzer B166
(View with back door open) |

Component Description

INFOID:000000008633201

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 Function (SONAR)

INFOID:000000008633202

APPLICATION ITEM

CONSULT can display each diagnostic item using the diagnostic test modes shown following.

Diagnosis mode	Description
ECU Identification	Displays sonar control unit part number.
Self Diagnostic Results	Displays sonar control unit self-diagnosis results.
Data Monitor	Displays sonar control unit input/output data in real time.
Active Test	Sonar control unit can provide a drive signal to components to check their operation.

SELF DIAGNOSTIC PROCEDURE

NOTE:

Always perform Preliminary Check before running Self-Diagnostic Procedure. Refer to [SN-6, "Preliminary Check"](#).

CONSULT can be used to read and clear DTCs. Refer to [GI-50, "Description"](#).

ECU IDENTIFICATION

Displays the part number of the sonar control unit.

SELF DIAGNOSTIC RESULTS

Refer to [SN-28, "DTC Index"](#).

DATA MONITOR

Monitor Item	Display	Description
FRONT BUZZER	On	Front sonar buzzer ON.
	Off	Front sonar buzzer OFF.

FRONT AND REAR SONAR SYSTEM

< SYSTEM DESCRIPTION >

Monitor Item	Display	Description
REAR BUZZER	On	Rear sonar buzzer ON.
	Off	Rear sonar buzzer OFF.
P RANGE	On	Shift selector is in park.
	Off	Shift selector is not in park.
REVERSE RANGE	On	Shift selector is in reverse.
	Off	Shift selector is not in reverse.
CANCEL SW	On	Sonar system OFF switch ON (sonar system is OFF).
	Off	Sonar system OFF switch OFF (sonar system is ON).
CANCEL SW IND	On	Sonar system OFF switch indicator lamp is ON.
	Off	Sonar system OFF switch indicator lamp is OFF.
VHCL SPE COND	On	Sonar control unit vehicle speed condition meets specifications for sonar system operation.
	Off	Sonar control unit vehicle speed condition does not meet specifications for sonar system operation (vehicle speed to high).
CR SEN [FL] CR SEN [FR] CR SEN [RL] CR SEN [RR]	ERROR	"ERROR" is displayed under the following conditions: <ul style="list-style-type: none"> • When there is no obstacle in the detection area (no problem exists with sensor part) • sensor is malfunctioning • sensor is disconnected • sensor circuit is open
	LV.2	The distance between the corner sensor and an obstacle is 30 cm (11.8 in) or more and less then 50 cm (19.6 in).
	LV.3	The distance between the corner sensor and an obstacle is less then 30 cm (11.8 in).
CTR SEN [RL] CTR SEN [RR] CTR SEN [FL] CTR SEN [FR]	ERROR	"ERROR" is displayed under the following conditions: <ul style="list-style-type: none"> • When there is no obstacle in the detection area (no problem exists with sensor part) • sensor is malfunctioning • sensor is disconnected • sensor circuit is open
	LV.0	The distance between the center sensor and an obstacle is more then 100 cm (39.3 in).
	LV.1	The distance between the center sensor and an obstacle is 60 cm (23.6 in) or more and less then 100 cm (39.3 in).
	LV.2	The distance between the center sensor and an obstacle is 50 cm (19.6 in) or more and less then 60 cm (23.6 in).
	LV.3	The distance between the center sensor and an obstacle is 30 cm (11.8 in) or more and less then 60 cm (19.6 in).
	LV.4	The distance between center sensor and an obstacle less than 30 cm (11.8 in).

ACTIVE TEST

Active test item	Operation	Function
BUZZER	FRONT ON	Sonar control unit operates the front sonar buzzer.
	REAR ON	Sonar control unit operates the rear sonar buzzer.
	STOP	Sonar control unit turns all sonar buzzers OFF.
CANSEL SW IND	ON	Sonar control unit turns the sonar system OFF switch indicator ON.
	OFF	Sonar control unit turns the sonar system OFF switch indicator OFF.
SONAR SENSOR	REAR ON	Sonar control unit turns the rear sonar sensors ON.
	FRONT ON	Sonar control unit turns the front sonar sensors ON.
	STOP	Sonar control unit turns all sonar sensors OFF.

POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

DTC/CIRCUIT DIAGNOSIS

POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure (With Rear Only Sonar System)

INFOID:000000008633203

INSPECTION FOR POWER SUPPLY AND GROUND CIRCUIT

1.CHECK FUSES

Check for blown rear sonar system fuses.

Unit	Power Source	Fuse No.	Location
Sonar control unit	ON or START	12	Fuse block (J/B)
		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 [GL-45. "Circuit Inspection"](#).

NO >> GO TO 2.

2.CHECK POWER SUPPLY CIRCUIT

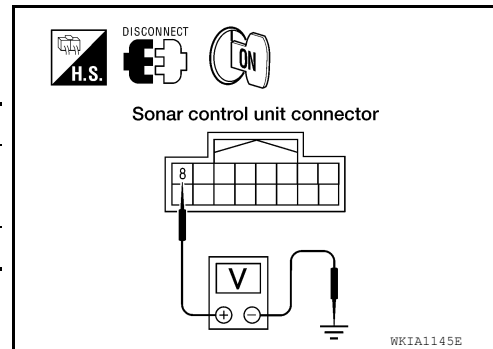
1. Disconnect sonar control unit connector.
2. Turn ignition switch ON.
3. Check voltage between sonar control unit connector B24 terminal 8 and ground.

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

Is there battery voltage?

YES >> GO TO 3.

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



3.CHECK GROUND CIRCUIT

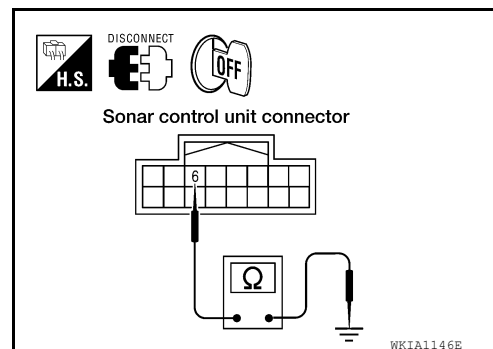
1. Turn ignition switch OFF.
2. Check continuity between sonar control unit B24 terminal 6 and ground.

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

Is there continuity?

YES >> Inspection End.

NO >> Check harness ground circuit.



Diagnosis Procedure (With Front and Rear Sonar System)

INFOID:000000008633204

INSPECTION FOR POWER SUPPLY AND GROUND CIRCUIT

1.CHECK FUSES

Check for blown sonar system fuses.

POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

Unit	Power Source	Fuse No.	Location
Sonar control unit	ON or START	12	Fuse block (J/B)
		51	IPDM E/R

Are any fuses blown?

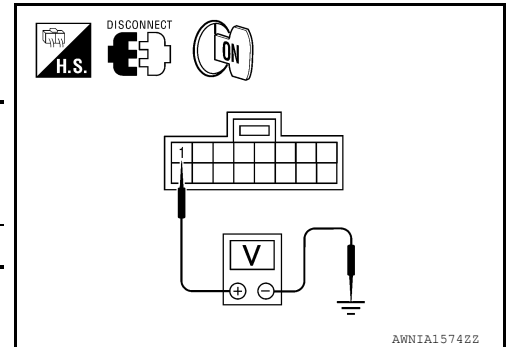
YES >> If fuse is blown, be sure to eliminate cause of malfunction before installing new fuse. Refer to [GL-45. "Circuit Inspection"](#).

NO >> GO TO 2.

2. CHECK POWER SUPPLY CIRCUIT

1. Disconnect sonar control unit connector B56.
2. Turn ignition switch ON.
3. 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?

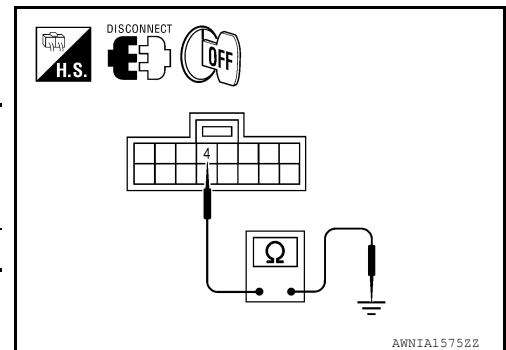
YES >> GO TO 3.

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

3. CHECK GROUND CIRCUIT

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

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



Is there continuity?

YES >> Inspection End.

NO >> Check harness ground circuit.

SONAR SENSOR CIRCUIT INSPECTION

< DTC/CIRCUIT DIAGNOSIS >

SONAR SENSOR CIRCUIT INSPECTION

Description

INFOID:000000008633205

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.

Component Function Check (With Front and Rear Sonar System)

INFOID:000000008633206

1. CHECK FUNCTION

1. Select "SONAR SENSOR" in "Active test" mode with CONSULT.
2. Check sonar sensor operation.

Test Item	CONSULT	Description
SONAR SENSOR	REAR ON	All rear sonar sensors ON and rear sonar buzzer sounds
	FRONT ON	All front sonar sensors ON and front sonar buzzer sounds
	STOP	Sensors OFF

Is the operation normal?

YES >> Inspection End.

NO >> Perform diagnosis procedure. Refer to [SN-17, "Diagnosis Procedure \(With Front and Rear Sonar System\)"](#).

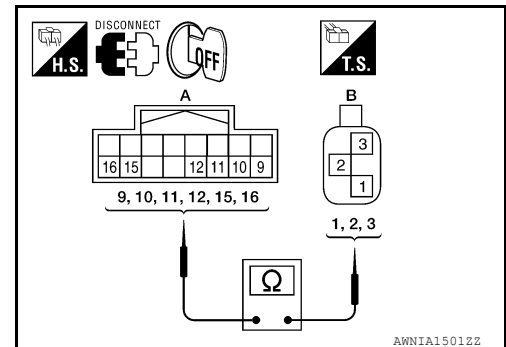
Diagnosis Procedure (With Rear Only Sonar System)

INFOID:000000008633207

1. CHECK REAR SONAR SENSOR CIRCUITS

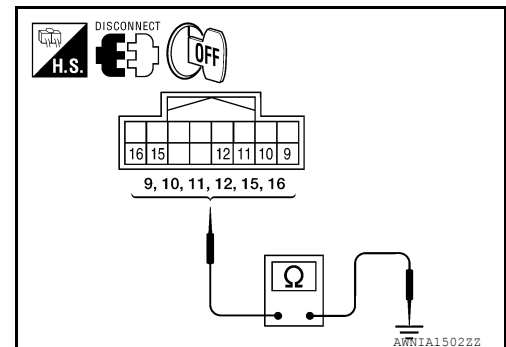
1. Turn ignition switch OFF.
2. Disconnect sonar control unit connector and rear sonar sensor connectors.
3. Check continuity between sonar control unit harness connector (A) and rear sonar sensor harness connectors (B).

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



4. Check continuity between sonar control unit harness connector and ground.

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



Are the inspection results normal?

YES >> Inspection End.

NO >> Repair harness or connector.

Diagnosis Procedure (With Front and Rear Sonar System)

INFOID:000000008633208

1. CHECK SONAR SENSOR CIRCUITS

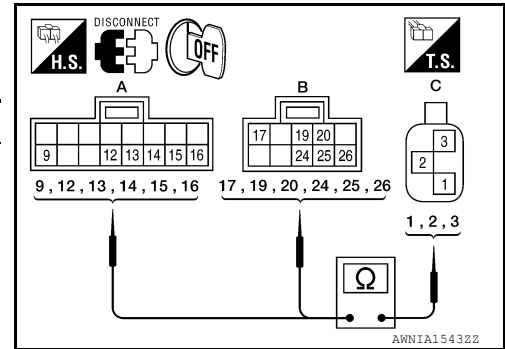
1. Turn ignition switch OFF.

SONAR SENSOR CIRCUIT INSPECTION

< DTC/CIRCUIT DIAGNOSIS >

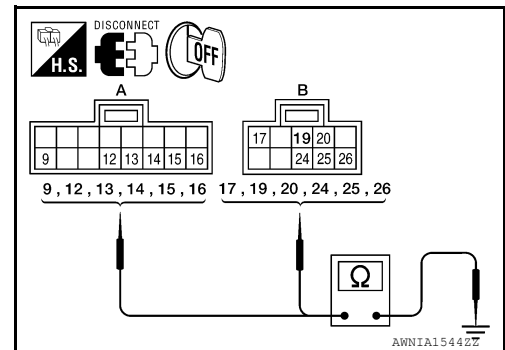
2. Disconnect sonar control unit connectors and sonar sensor connectors.
3. Check continuity between sonar control unit harness connectors (A, B) and sonar sensor harness connectors (C).

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



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

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



Are the inspection results normal?

- YES >> Inspection End.
 NO >> Repair harness or connector.

Component Inspection (With Front and Rear Sonar System)

INFOID:000000008633209

1. CHECK FUNCTION

1. Select "CR SEN[FL]", "CR SEN[FR]", "CR SEN[RL]", "CR SEN[RR]", "CTR SEN[RL]", "CTR SEN[RR]", "CTR SEN[FL]", "CTR SEN[FR]" in "Data monitor" mode with CONSULT.
2. Check sonar sensor signal under the following conditions.

Monitor Item	Display	Description
CR SEN [FL] CR SEN [FR] CR SEN [RL] CR SEN [RR]	ERROR	"ERROR" is displayed under the following conditions: <ul style="list-style-type: none"> • When there is no obstacle in the detection area (no problem exists with sensor part) • sensor is malfunctioning • sensor is disconnected • sensor circuit is open
	LV.2	The distance between the corner sensor and an obstacle is 30 cm (11.8 in) or more and less than 50 cm (19.6 in).
	LV.3	The distance between the corner sensor and an obstacle is less than 30 cm (11.8 in).
CTR SEN [RL] CTR SEN [RR] CTR SEN [FL] CTR SEN [FR]	ERROR	"ERROR" is displayed under the following conditions: <ul style="list-style-type: none"> • When there is no obstacle in the detection area (no problem exists with sensor part) • sensor is malfunctioning • sensor is disconnected • sensor circuit is open
	LV.0	The distance between the center sensor and an obstacle is more than 100 cm (39.3 in).
	LV.1	The distance between the center sensor and an obstacle is 60 cm (23.6 in) or more and less than 100 cm (39.3 in).
	LV.2	The distance between the center sensor and an obstacle is 50 cm (19.6 in) or more and less than 60 cm (23.6 in).
	LV.3	The distance between the center sensor and an obstacle is 30 cm (11.8 in) or more and less than 60 cm (19.6 in).
	LV.4	The distance between center sensor and an obstacle less than 30 cm (11.8 in).

Is the indication normal?

SONAR SENSOR CIRCUIT INSPECTION

< DTC/CIRCUIT DIAGNOSIS >

YES >> Inspection End.

NO >> Perform diagnosis procedure. Refer to [SN-17, "Diagnosis Procedure \(With Front and Rear Sonar System\)"](#).

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SONAR BUZZER CIRCUIT INSPECTION

< DTC/CIRCUIT DIAGNOSIS >

SONAR BUZZER CIRCUIT INSPECTION

Description

INFOID:000000008633210

When the A/T selector lever is not in 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.

Component Function Check (With Front and Rear Sonar System)

INFOID:000000008633211

1. CHECK FUNCTION

1. Select "BUZZER" in "Active test" mode with CONSULT.
2. Check the front and rear sonar sensor buzzer operation.

Test Item	CONSULT	Description
BUZZER	FRONT ON	Front sonar buzzer sounds
	REAR ON	Rear sonar buzzer sounds
	STOP	All buzzers OFF

Is the operation normal?

YES >> Inspection End.

NO >> Perform diagnosis procedure. Refer to [SN-21. "Diagnosis Procedure \(With Front and Rear Sonar System\)"](#).

Diagnosis Procedure (With Rear Only Sonar System)

INFOID:000000008633212

1. CHECK SONAR BUZZER

Refer to [SN-21. "Component Inspection"](#).

Is the inspection result normal?

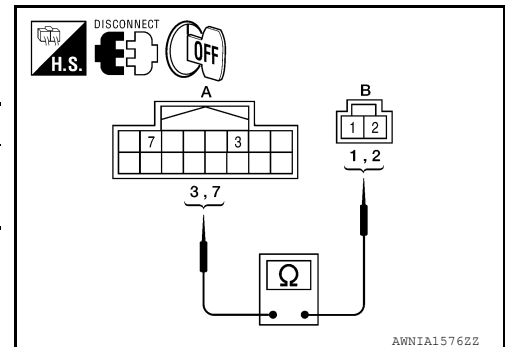
YES >> GO TO 2.

NO >> Replace sonar buzzer. Refer to [SN-54. "Removal and Installation"](#).

2. CHECK SONAR BUZZER CIRCUITS

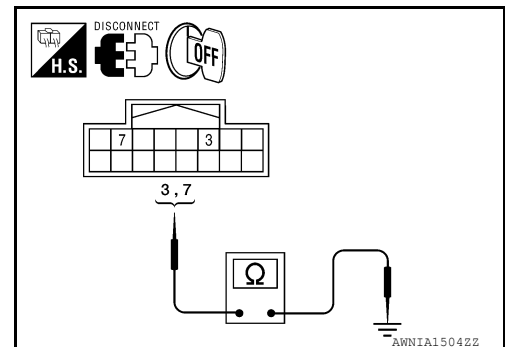
1. Turn ignition switch OFF.
2. Disconnect sonar control unit connector and sonar buzzer connector.
3. Check continuity between sonar control unit harness connector (A) and sonar buzzer harness connector (B).

Connector	Terminal	Connector	Terminal	Continuity
B24 (A)	3	M47 (B)	2	Yes
	7		1	



4. Check continuity between sonar control unit harness connector and ground.

Connector	Terminal	Continuity
B24	3, 7	No



Are the inspection results normal?

YES >> Inspection End.

NO >> Repair harness or connector.

SONAR BUZZER CIRCUIT INSPECTION

< DTC/CIRCUIT DIAGNOSIS >

Diagnosis Procedure (With Front and Rear Sonar System)

INFOID:000000008633213

1. CHECK BUZZERS

Refer to [SN-21, "Component Inspection"](#).

Is the inspection result normal?

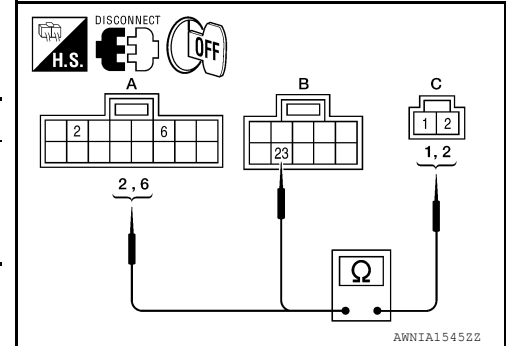
YES >> GO TO 2.

NO >> Replace buzzer. Refer to [SN-54, "Removal and Installation"](#).

2. CHECK BUZZER CIRCUITS

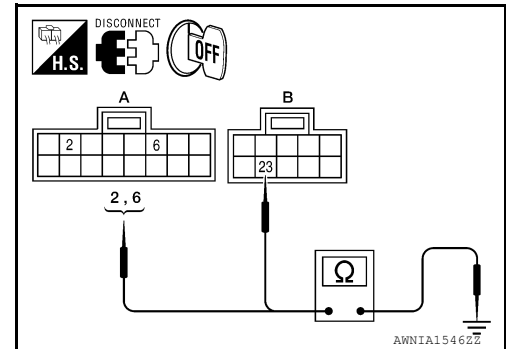
1. Turn ignition switch OFF.
2. Disconnect sonar control unit connectors and sonar buzzer connectors.
3. Check continuity between sonar control unit harness connectors (A, B) and sonar buzzer harness connectors (C).

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



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

Connector	Terminal	Continuity
B56 (A)	2, 6	Ground
B57 (B)	23	



Are the inspection results normal?

YES >> Inspection End.

NO >> Repair harness or connector.

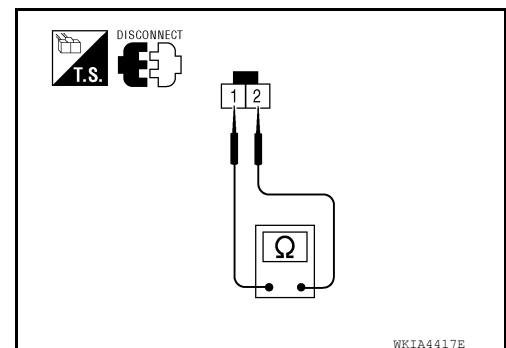
Component Inspection

SONAR BUZZER

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

1 - 2

: 50 Ω (+/- 10 Ω)



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SONAR SYSTEM OFF SWITCH CIRCUIT INSPECTION

< DTC/CIRCUIT DIAGNOSIS >

SONAR SYSTEM OFF SWITCH CIRCUIT INSPECTION

Description

INFOID:000000008633215

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.

Component Function Check (With Front and Rear Sonar System)

INFOID:000000008633216

SONAR SYSTEM OFF SWITCH

1. CHECK FUNCTION

1. Select "CANCEL SW" and "CANCEL SW IND" in "Data monitor" mode with CONSULT.
2. Check sonar system off switch signal under the following conditions.

Monitor Item	Display	Description
CANCEL SW	On	Sonar system OFF switch ON (sonar system is OFF).
	Off	Sonar system OFF switch OFF (sonar system is ON).
CANCEL SW IND	On	Sonar system OFF switch indicator lamp is ON.
	Off	Sonar system OFF switch indicator lamp is OFF.

Is the indication normal?

- YES >> Inspection End.
NO >> Perform diagnosis procedure. Refer to [SN-23, "Diagnosis Procedure \(With Front and Rear Sonar System\)"](#).

SONAR SYSTEM OFF SWITCH INDICATOR

1. CHECK FUNCTION

1. Select "CANSEL SW IND" in "Active test" mode with CONSULT.
2. Check the sonar system off switch operation.

Active test item	Operation	Function
CANSEL SW IND	ON	Sonar control unit turns the sonar system OFF switch indicator ON.
	OFF	Sonar control unit turns the sonar system OFF switch indicator OFF.

Is the operation normal?

- YES >> Inspection End.
NO >> Perform diagnosis procedure. Refer to [SN-23, "Diagnosis Procedure \(With Front and Rear Sonar System\)"](#).

Diagnosis Procedure (With Rear Only Sonar System)

INFOID:000000008633217

1. CHECK SONAR SYSTEM OFF SWITCH

Refer to [SN-24, "Component Inspection"](#).

Is the inspection result normal?

- YES >> GO TO 2.
NO >> Replace sonar system OFF switch. Refer to [IP-14, "Removal and Installation"](#).

2. CHECK SONAR SYSTEM OFF SWITCH CIRCUITS

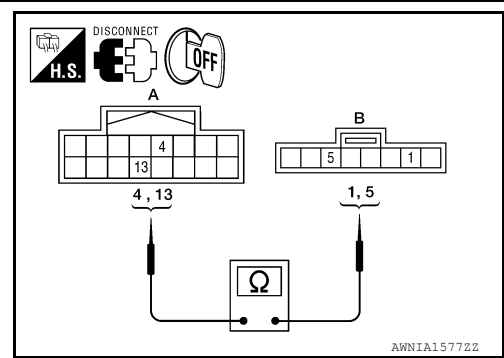
1. Turn ignition switch OFF.
2. Disconnect sonar control unit connector and sonar system OFF switch connector.

SONAR SYSTEM OFF SWITCH CIRCUIT INSPECTION

< DTC/CIRCUIT DIAGNOSIS >

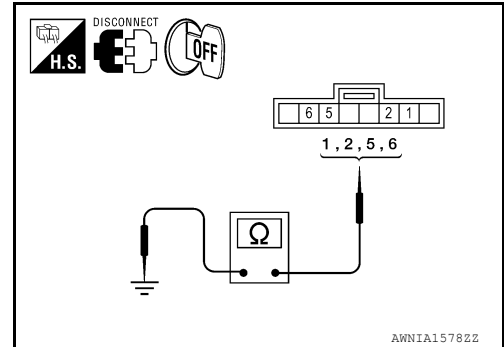
3. Check continuity between sonar control unit harness connector (A) and sonar system OFF switch harness connector (B).

Connector	Terminal	Connector	Terminal	Continuity
B24 (A)	4	M116 (B)	5	Yes
	13		1	



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

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



Are the inspection results normal?

- YES >> Inspection End.
NO >> Repair harness or connector.

Diagnosis Procedure (With Front and Rear Sonar System)

INFOID:000000008633218

1. CHECK SONAR SYSTEM OFF SWITCH

Refer to [SN-24. "Component Inspection"](#).

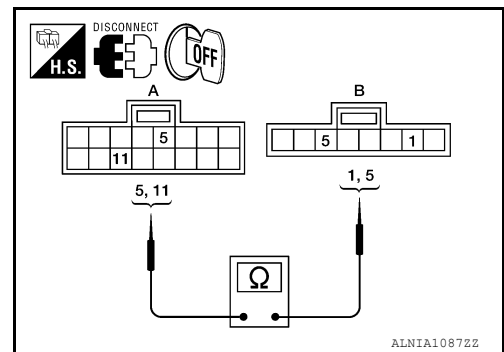
Is the inspection result normal?

- YES >> GO TO 2.
NO >> Replace sonar system OFF switch. Refer to [IP-14. "Removal and Installation"](#).

2. CHECK SONAR SYSTEM OFF SWITCH CIRCUITS

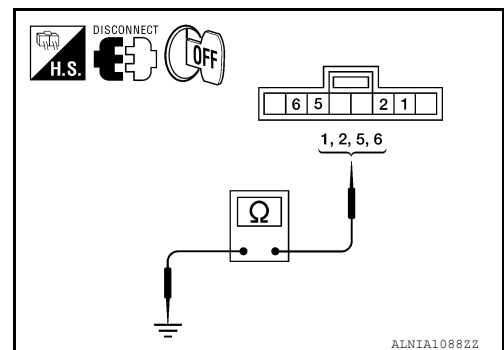
- Turn ignition switch OFF.
- Disconnect sonar control unit connector and sonar system OFF switch connector.
- Check continuity between sonar control unit harness connector (A) and sonar system OFF switch harness connector (B).

Connector	Terminal	Connector	Terminal	Continuity
B56 (A)	5	M116 (B)	5	Yes
	11		1	



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

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



Are the inspection results normal?

- YES >> Inspection End.
NO >> Repair harness or connector.

SONAR SYSTEM OFF SWITCH CIRCUIT INSPECTION

< DTC/CIRCUIT DIAGNOSIS >

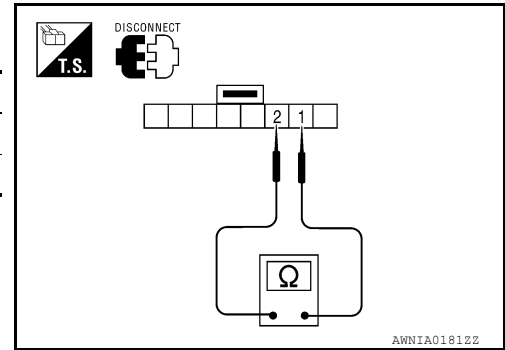
Component Inspection

INFOID:000000008633219

SONAR SYSTEM OFF SWITCH

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

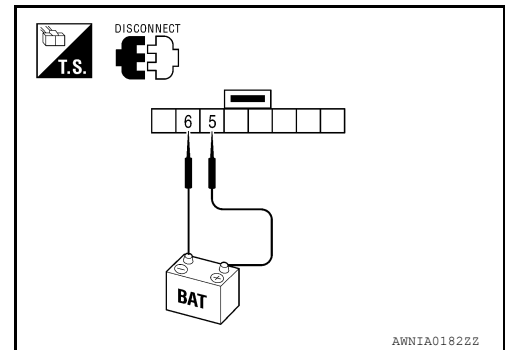
Sonar system OFF switch	Terminals	Continuity
Depressed	1 - 2	Yes
Released		No



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 OFF switch	5	Battery voltage	Indicator ON
	6	Ground	



SONAR CONTROL UNIT FOR REAR ONLY SONAR SYSTEM

< ECU DIAGNOSIS INFORMATION >

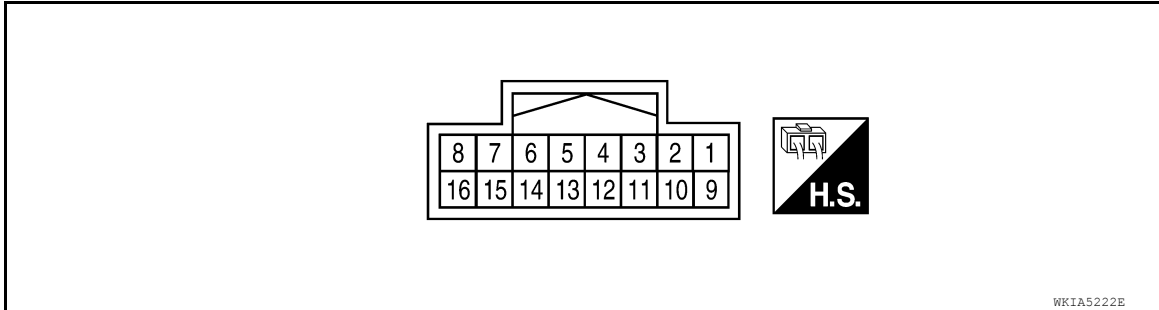
ECU DIAGNOSIS INFORMATION

SONAR CONTROL UNIT FOR REAR ONLY SONAR SYSTEM

Reference Value

INFOID:000000008633220

SONAR CONTROL UNIT TERMINAL LAYOUT



TERMINALS AND REFERENCE VALUES FOR SONAR CONTROL UNIT

Terminal (wire color)	Item	Condition		Reference value (V) (Approx.)	
		Ignition switch	Operation		
3 (R)	Sonar buzzer return	ON	—	0 - 12 (variable)	
4 (BR/Y)	Sonar system OFF indicator output	ON	Sonar system OFF switch	ON	0
				OFF	Battery voltage
5 (G/W)	Reverse signal	ON	Transmission gear se- lector lever	R position	Battery voltage
			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	<ul style="list-style-type: none"> • Sonar system OFF switch ON • Transmission gear selector lever in R po- sition • No obstacles 	Battery voltage	
10 (P)	Rear sonar sensor signal - LH outer	ON	<ul style="list-style-type: none"> • Sonar system OFF switch ON • Transmission gear selector lever in R po- sition • No obstacles 	Battery voltage	
11 (O)	Rear sonar sensor signal - LH inner	ON	<ul style="list-style-type: none"> • Sonar system OFF switch ON • Transmission gear selector lever in R po- sition • Distance obstacles 	Battery voltage	
12 (LG)	Rear sonar sensor signal - RH inner	ON	<ul style="list-style-type: none"> • Sonar system OFF switch ON • Transmission gear selector lever in R po- sition • Distance obstacles 	Battery voltage	
13 (LG)	Sonar system OFF switch signal	ON	Sonar system OFF switch	ON	0
				OFF	Battery voltage

SONAR CONTROL UNIT FOR REAR ONLY SONAR SYSTEM

< ECU DIAGNOSIS INFORMATION >

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

DTC Index

INFOID:000000008633221

Fault Code	Malfunction	Service Procedure
11	Rear sonar sensor LH outer	<ol style="list-style-type: none"> 1. Check harness for open or short. 2. Replace sonar sensor. Refer to SN-52, "Removal and Installation".
12	Rear sonar sensor LH inner	
13	Rear sonar sensor RH inner	
14	Rear sonar sensor RH outer	
21	Sonar buzzer	<ol style="list-style-type: none"> 1. Refer to SN-21, "Component Inspection". 2. Check harness for open or short. 3. Refer to SN-48, "Symptom Table".
22	Sonar system OFF indicator	<ol style="list-style-type: none"> 1. Refer to SN-24, "Component Inspection". 2. Check harness for open or short. 3. Refer to symptom table.
23	Sonar system OFF switch	
24	Sonar control unit	Replace sonar control unit. Refer to SN-53, "Removal and Installation" .

SONAR CONTROL UNIT FOR FRONT AND REAR SONAR SYSTEM

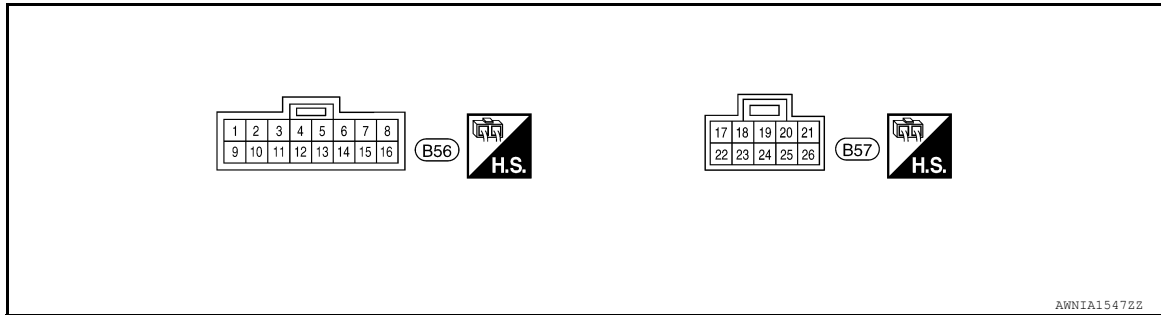
< ECU DIAGNOSIS INFORMATION >

SONAR CONTROL UNIT FOR FRONT AND REAR SONAR SYSTEM

Reference Value

INFOID:000000008633222

SONAR CONTROL UNIT HARNESS TERMINAL LAYOUT

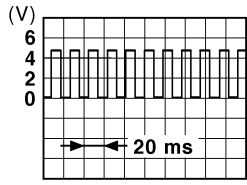


TERMINALS AND REFERENCE VALUES FOR SONAR CONTROL UNIT

Terminal (color)	Item	Condition		Reference value (V) (Approx.)	
		Ignition switch	Operation		
1 (G/R)	Sonar control unit power	ON	—	Battery voltage	
2 (L)	Sonar buzzer drive signal	ON	Object sensed	Battery voltage	
3 (G/W)	Reverse signal	ON	Transmission gear selector lever in R position	Battery voltage	
			Transmission gear selector lever not in R position	0	
4 (B)	Sonar control unit ground	—	—	—	
5 (BR/Y)	Sonar system OFF indicator output	ON	Sonar system OFF switch	ON	0
				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 switch signal	ON	Sonar system OFF switch	ON	0
				OFF	Battery voltage
12 (Y)	Rear sonar sensor ground	ON	—	—	
13 (LG)	Rear sonar sensor signal - RH inner	ON	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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

< ECU DIAGNOSIS INFORMATION >

Terminal (color)	Item	Condition		Reference value (V) (Approx.)
		Ignition switch	Operation	
16 (GR)	Rear sonar sensor signal - RH outer	ON	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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)]	<p>NOTE: Maximum voltage may be 12V due to specifications (connected units).</p>  <p style="text-align: right; font-size: small;">PKIC0643B</p>
23 (R)	Front sonar buzzer return	ON	—	0 - 12 (variable)
24 (P)	Front sonar sensor signal - LH outer	ON	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	—	—

DTC Index

INFOID:000000008633223

DTC	Malfunction	Service Procedure
B2700	Front sonar sensor LH outer	Replace sonar sensor. Refer to SN-52, "Removal and Installation" .
B2701	Front sonar sensor LH outer harness	<ol style="list-style-type: none"> 1. Check harness for open or short. Refer to SN-17, "Diagnosis Procedure (With Front and Rear Sonar System)". 2. Replace sonar sensor. Refer to SN-52, "Removal and Installation".
B2702	Front sonar sensor RH outer	Replace sonar sensor. Refer to SN-52, "Removal and Installation" .
B2703	Front sonar sensor RH outer harness	<ol style="list-style-type: none"> 1. Check harness for open or short. Refer to SN-17, "Diagnosis Procedure (With Front and Rear Sonar System)". 2. Replace sonar sensor. Refer to SN-52, "Removal and Installation".

SONAR CONTROL UNIT FOR FRONT AND REAR SONAR SYSTEM

< ECU DIAGNOSIS INFORMATION >

DTC	Malfunction	Service Procedure
B2704	Rear sonar sensor LH outer	Replace sonar sensor. Refer to SN-52, "Removal and Installation" .
B2705	Rear sonar sensor LH outer harness	<ol style="list-style-type: none"> 1. Check harness for open or short. Refer to SN-17, "Diagnosis Procedure (With Front and Rear Sonar System)". 2. Replace sonar sensor. Refer to SN-52, "Removal and Installation".
B2706	Rear sonar sensor RH outer	Replace sonar sensor. Refer to SN-52, "Removal and Installation" .
B2707	Rear sonar sensor RH outer harness	<ol style="list-style-type: none"> 1. Check harness for open or short. Refer to SN-17, "Diagnosis Procedure (With Front and Rear Sonar System)". 2. Replace sonar sensor. Refer to SN-52, "Removal and Installation".
B2708	Rear sonar sensor LH inner	Replace sonar sensor. Refer to SN-52, "Removal and Installation" .
B2709	Rear sonar sensor LH inner harness	<ol style="list-style-type: none"> 1. Check harness for open or short. Refer to SN-17, "Diagnosis Procedure (With Front and Rear Sonar System)". 2. Replace sonar sensor. Refer to SN-52, "Removal and Installation".
B270A	Rear sonar sensor RH inner	Replace sonar sensor. Refer to SN-52, "Removal and Installation" .
B270B	Rear sonar sensor RH inner harness	<ol style="list-style-type: none"> 1. Check harness for open or short. Refer to SN-17, "Diagnosis Procedure (With Front and Rear Sonar System)". 2. Replace sonar sensor. Refer to SN-52, "Removal and Installation".
B270C	Front sonar sensor LH inner	Replace sonar sensor. Refer to SN-52, "Removal and Installation" .
B270D	Front sonar sensor LH inner harness	<ol style="list-style-type: none"> 1. Check harness for open or short. Refer to SN-17, "Diagnosis Procedure (With Front and Rear Sonar System)". 2. Replace sonar sensor. Refer to SN-52, "Removal and Installation".
B270E	Front sonar sensor RH inner	Replace sonar sensor. Refer to SN-52, "Removal and Installation" .
B270F	Front sonar sensor RH inner harness	<ol style="list-style-type: none"> 1. Check harness for open or short. Refer to SN-17, "Diagnosis Procedure (With Front and Rear Sonar System)". 2. Replace sonar sensor. Refer to SN-52, "Removal and Installation".

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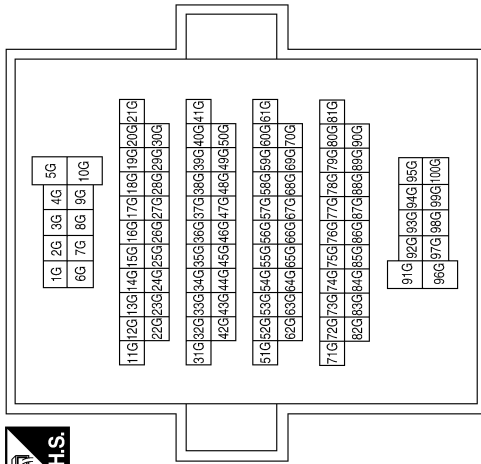
SN

SONAR SYSTEM

< WIRING DIAGRAM >

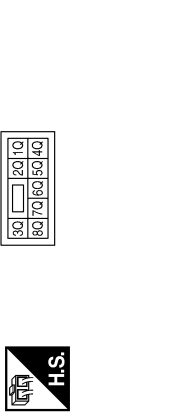
SONAR SYSTEM CONNECTORS - REAR

Connector No.	M31
Connector Name	WIRE TO WIRE
Connector Color	WHITE



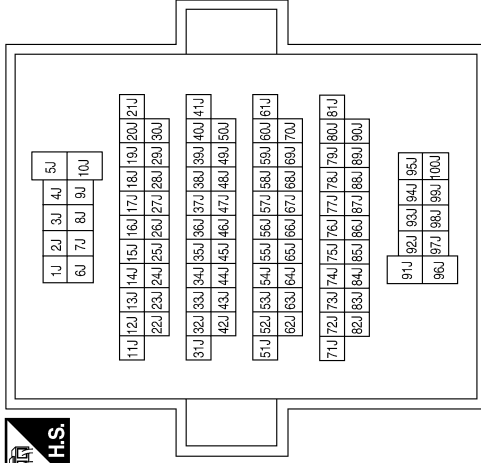
Terminal No.	Color of Wire	Signal Name
64G	R	-
94G	G/W	-
95G	G	-

Connector No.	M39
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1Q	G/R	-

Connector No.	M40
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
15J	L	-
17J	G/R	-
18J	LG	-
19J	BR/Y	-
27J	R	-

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SONAR SYSTEM

< WIRING DIAGRAM >

Connector No.	M47
Connector Name	SONAR BUZZER
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	L	-
2	R	-

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



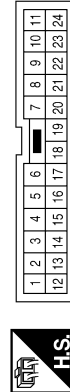
Terminal No.	Color of Wire	Signal Name
1	G	-
2	R	-
3	G	-
5	G/W	-
6	W/B	-
7	Y/R	-

Connector No.	M116
Connector Name	SONAR SYSTEM OFF SWITCH
Connector Color	GRAY



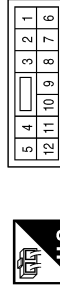
Terminal No.	Color of Wire	Signal Name
1	LG	-
2	B	-
5	BR/Y	-
6	B	-

Connector No.	E5
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
13	R	-

Connector No.	E35
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
6	GR	-
7	LG	-
8	O	-
9	P	-
10	Y	-
11	LG/B	-
12	G/W	-

SONAR SYSTEM

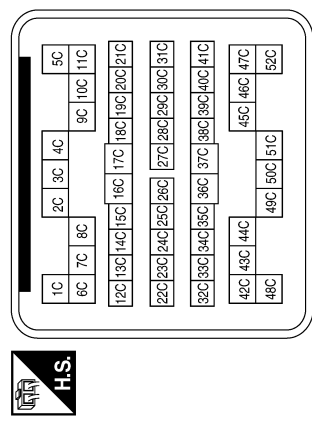
< WIRING DIAGRAM >

Connector No.	E119
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

Terminal No.	Color of Wire	Signal Name
16	G	REVERSE LAMP

Terminal No.	Color of Wire	Signal Name
22C	Y	-
23C	LG/B	-
38C	GR	-
39C	LG	-
40C	O	-
41C	P	-

Connector No.	E41
Connector Name	WIRE TO WIRE
Connector Color	GRAY

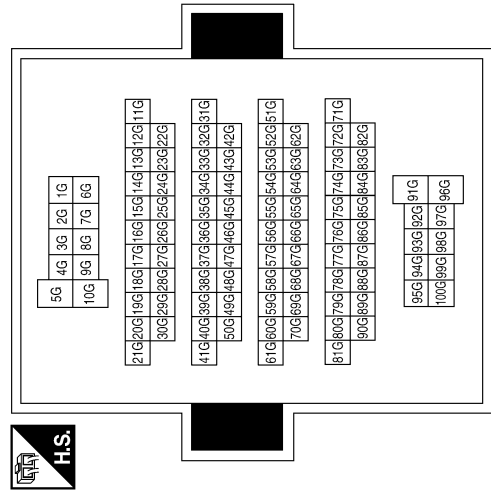


Connector No.	F9
Connector Name	A/T ASSEMBLY
Connector Color	GREEN

Terminal No.	Color of Wire	Signal Name
7	R	-

Terminal No.	Color of Wire	Signal Name
64G	R	-
94G	G/W	-
95G	G	-

Connector No.	E152
Connector Name	WIRE TO WIRE
Connector Color	WHITE



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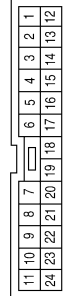
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SONAR SYSTEM


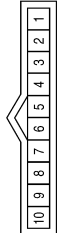
< WIRING DIAGRAM >

Connector No.	F14
Connector Name	WIRE TO WIRE
Connector Color	WHITE

Terminal No.	13	Color of Wire	R	Signal Name	-
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Connector No.	F502
Connector Name	TCM (TRANSMISSION CONTROL MODULE)
Connector Color	GRAY

Terminal No.	7	Color of Wire	R	Signal Name	REV LAMP RLY
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Connector No.	C1
Connector Name	WIRE TO WIRE
Connector Color	GRAY




Terminal No.	22C	Color of Wire	Y	Signal Name	-
23C	LG/B	LG/B	-	-	
38C	GR	GR	-	-	
39C	LG	LG	-	-	
40C	O	O	-	-	
41C	P	P	-	-	

Connector No.	C3
Connector Name	WIRE TO WIRE
Connector Color	GRAY




Terminal No.	2	Color of Wire	O	Signal Name	-
3	P	P	-	-	
4	Y	Y	-	-	
6	GR	GR	-	-	
7	LG	LG	-	-	
8	LG/B	LG/B	-	-	

Connector No.	C101
Connector Name	WIRE TO WIRE
Connector Color	GRAY



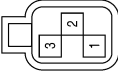

Terminal No.	2	Color of Wire	O	Signal Name	-
3	P	P	-	-	
4	Y	Y	-	-	
6	GR	GR	-	-	
7	LG	LG	-	-	
8	LG/B	LG/B	-	-	

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SONAR SYSTEM

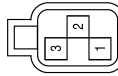
< WIRING DIAGRAM >

Connector No.	C104
Connector Name	REAR SONAR SENSOR RH INNER
Connector Color	BLACK



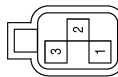
Terminal No.	Color of Wire	Signal Name
1	LG/B	-
2	LG	-
3	Y	-

Connector No.	C103
Connector Name	REAR SONAR SENSOR LH INNER
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	LG/B	-
2	O	-
3	Y	-

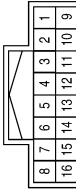
Connector No.	C102
Connector Name	REAR SONAR SENSOR LH OUTER
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	LG/B	-
2	P	-
3	Y	-

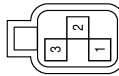
Terminal No.	Color of Wire	Signal Name
9	GR	SENSOR SIGNAL ROR
10	P	SENSOR SIGNAL ROL
11	O	SENSOR SIGNAL RIL
12	LG	SENSOR SIGNAL RIR
13	LG	ON/OFF SWITCH
14	-	-
15	Y	REAR SENSOR GND
16	LG/B	REAR SENSOR PWR

Connector No.	B24
Connector Name	SONAR CONTROL UNIT (WITH REAR SONAR SYSTEM)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	-	-
2	-	-
3	R	SOUNDER -
4	BR/Y	STATUS LED
5	GW	REVERSE LAMP SIGNAL
6	B	AI GND
7	L	SOUNDER +
8	G/R	AI POWER

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



Terminal No.	Color of Wire	Signal Name
1	LG/B	-
2	GR	-
3	Y	-

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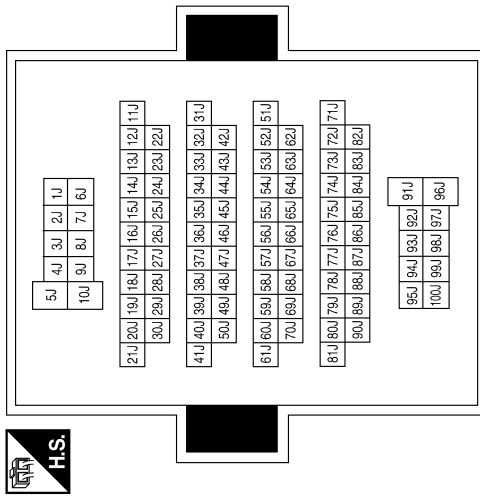
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SONAR SYSTEM

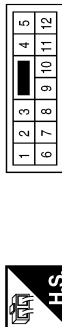
< WIRING DIAGRAM >

Terminal No.	Color of Wire	Signal Name
15J	L	-
17J	G/R	-
18J	LG	-
19J	BR/Y	-
27J	R	-

Connector No.	B69
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Connector No.	B41
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
6	GR	-
7	LG	-
8	O	-
9	P	-
10	Y	-
11	LG/B	-
12	G/W	-

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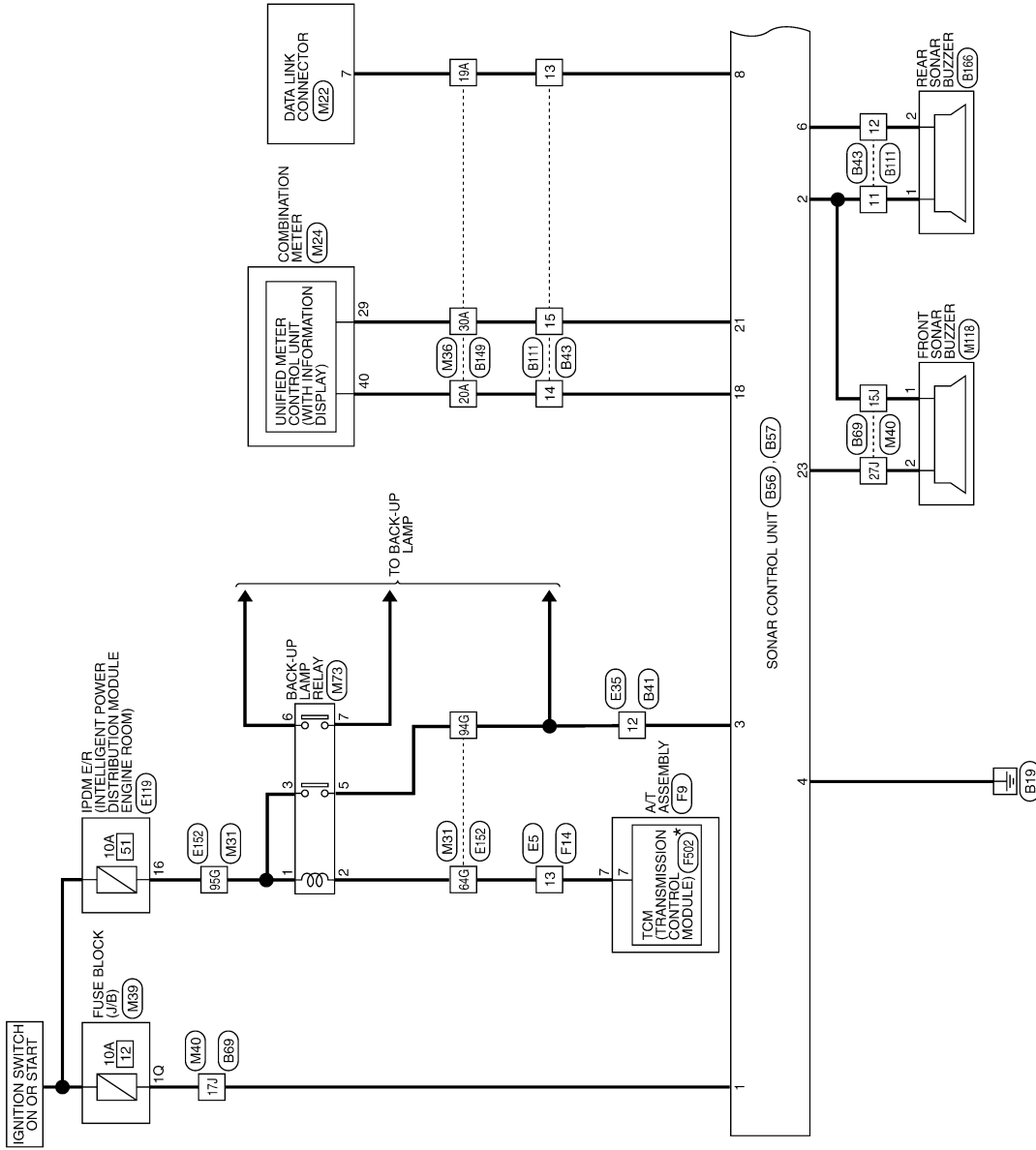
SONAR SYSTEM

< WIRING DIAGRAM >

Wiring Diagram - Front And Rear

INFOID:000000008633225

SONAR SYSTEM - FRONT AND REAR



*: THIS CONNECTOR IS NOT SHOWN IN "HARNES LAYOUT" OF PG SECTION.

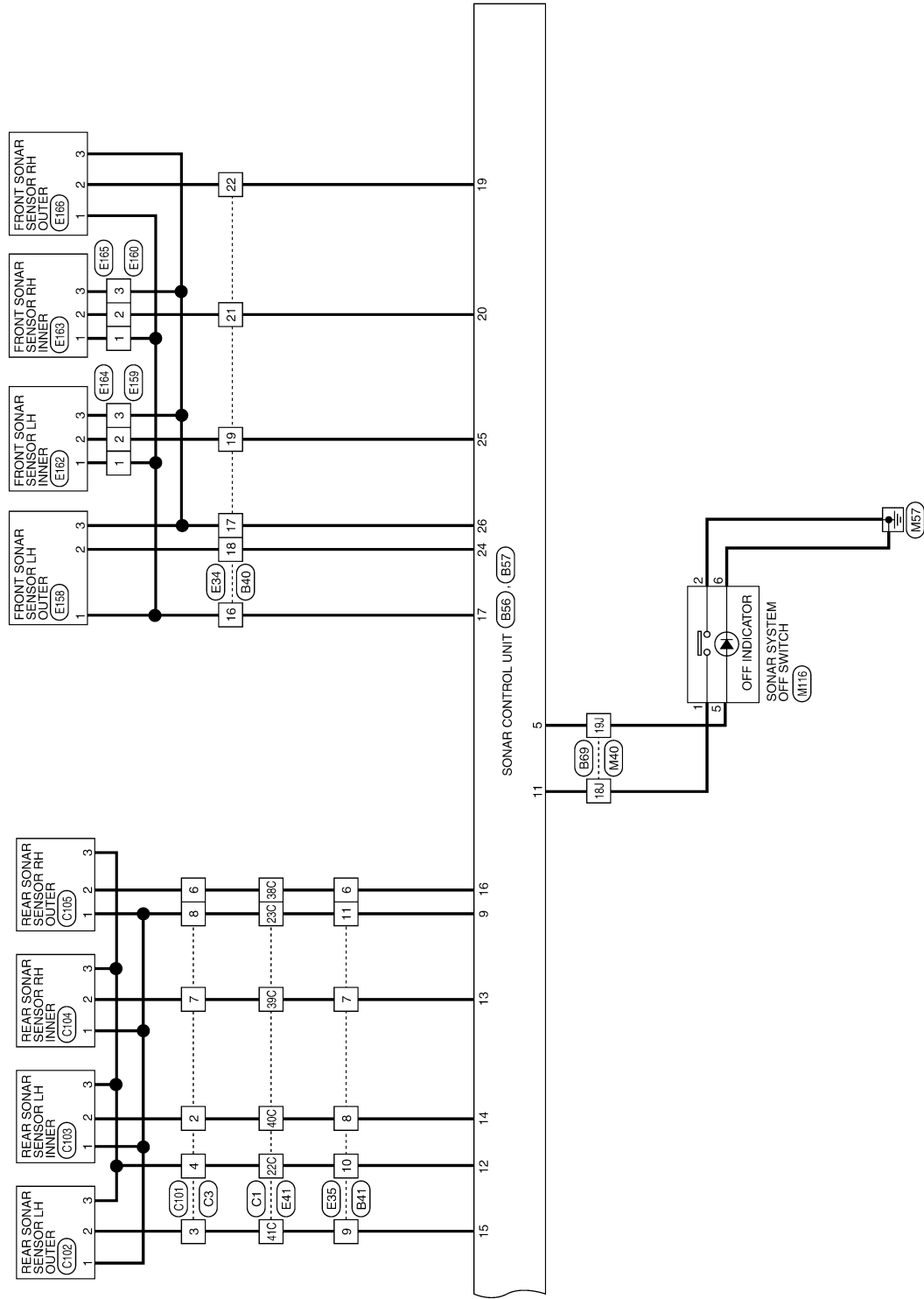
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SONAR SYSTEM

< WIRING DIAGRAM >



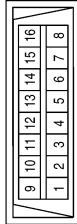
ABNWA1544GB

SONAR SYSTEM

< WIRING DIAGRAM >

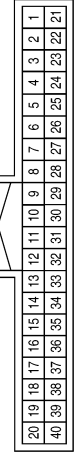
SONAR SYSTEM CONNECTORS - FRONT AND REAR

Connector No.	M22
Connector Name	DATA LINK CONNECTOR
Connector Color	WHITE



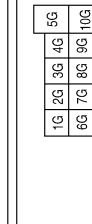
Terminal No.	Color of Wire	Signal Name
7	G/W	-

Connector No.	M24
Connector Name	COMBINATION METER
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
29	W/R	SPEED OUT
40	GR/R	PN REVERSE

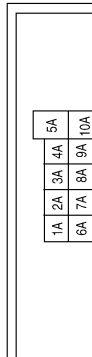
Connector No.	M31
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name								
11G	2G	13G	14G	15G	16G	17G	18G	19G	20G	21G
22G	23G	24G	25G	26G	27G	28G	29G	30G		
31G	32G	33G	34G	35G	36G	37G	38G	39G	40G	41G
42G	43G	44G	45G	46G	47G	48G	49G	50G		
51G	52G	53G	54G	55G	56G	57G	58G	59G	60G	61G
62G	63G	64G	65G	66G	67G	68G	69G	70G		
71G	72G	73G	74G	75G	76G	77G	78G	79G	80G	81G
82G	83G	84G	85G	86G	87G	88G	89G	90G		
91G	92G	93G	94G	95G						
96G	97G	98G	99G	100G						

Terminal No.	Color of Wire	Signal Name
64G	R	-
94G	G/W	-
95G	G	-

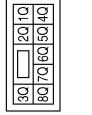
Connector No.	M36
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name								
11A	12A	13A	14A	15A	16A	17A	18A	19A	20A	21A
22A	23A	24A	25A	26A	27A	28A	29A	30A		
31A	32A	33A	34A	35A	36A	37A	38A	39A	40A	41A
42A	43A	44A	45A	46A	47A	48A	49A	50A		
51A	52A	53A	54A	55A	56A	57A	58A	59A	60A	61A
62A	63A	64A	65A	66A	67A	68A	69A	70A		
71A	72A	73A	74A	75A	76A	77A	78A	79A	80A	81A
82A	83A	84A	85A	86A	87A	88A	89A	90A		
91A	92A	93A	94A	95A						
96A	97A	98A	99A	100A						

Terminal No.	Color of Wire	Signal Name
19A	G/W	-
20A	GR/R	-
30A	W/R	-

Connector No.	M39
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1Q	G/R	-

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SONAR SYSTEM

< WIRING DIAGRAM >

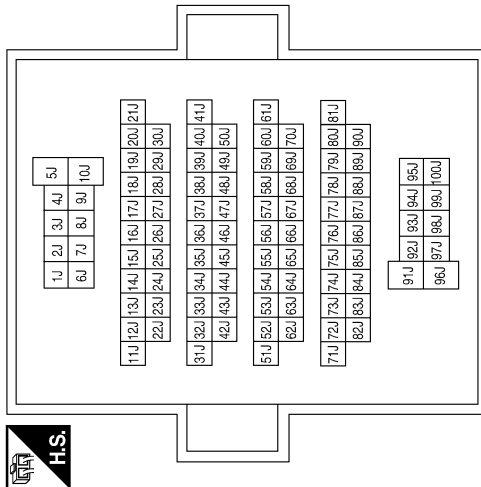
Connector No.	M73
Connector Name	BACK-UP LAMP RELAY
Connector Color	BROWN



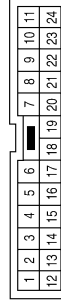
Terminal No.	Color of Wire	Signal Name
1	G	-
2	R	-
3	G	-
5	G/W	-
6	W/B	-
7	Y/R	-

Terminal No.	Color of Wire	Signal Name
15J	L	-
17J	G/R	-
18J	LG	-
19J	BR/Y	-
27J	R	-

Connector No.	M40
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Connector No.	E5
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
13	R	-

Connector No.	M118
Connector Name	FRONT SONAR BUZZER
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	L	-
2	R	-

Connector No.	M116
Connector Name	SONAR SYSTEM OFF SWITCH
Connector Color	GRAY



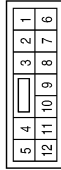
Terminal No.	Color of Wire	Signal Name
1	LG	-
2	B	-
5	BR/Y	-
6	B	-

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SONAR SYSTEM

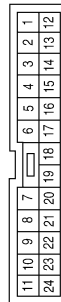
< WIRING DIAGRAM >

Connector No.	E35
Connector Name	WIRE TO WIRE
Connector Color	WHITE



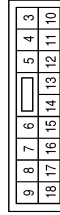
Terminal No.	Color of Wire	Signal Name
6	GR	-
7	LG	-
8	O	-
9	P	-
10	Y	-
11	LG/B	-
12	G/W	-

Connector No.	E34
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
16	LG/B	-
17	Y	-
18	P	-
19	O	-
21	LG	-
22	GR	-

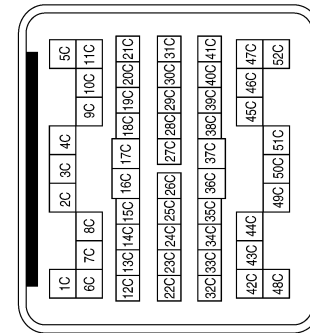
Connector No.	E119
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
16	G	REVERSE LAMP

Terminal No.	Color of Wire	Signal Name
22C	Y	-
23C	LG/B	-
38C	GR	-
39C	LG	-
40C	O	-
41C	P	-

Connector No.	E41
Connector Name	WIRE TO WIRE
Connector Color	GRAY



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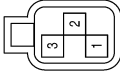
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SONAR SYSTEM

< WIRING DIAGRAM >

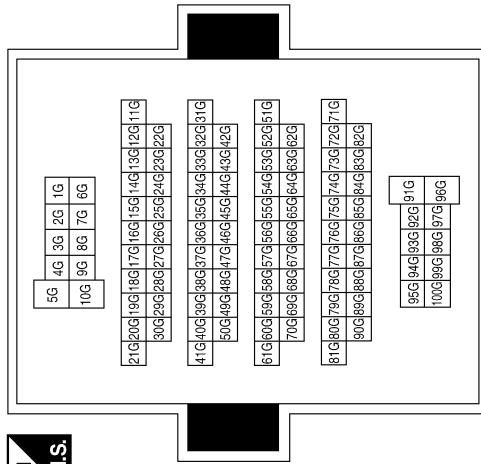
Connector No.	E158
Connector Name	FRONT SONAR SENSOR LH OUTER
Connector Color	BLACK



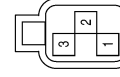
Terminal No.	Color of Wire	Signal Name
1	LG/B	-
2	P	-
3	Y	-

Terminal No.	Color of Wire	Signal Name
64G	R	-
94G	G/W	-
95G	G	-

Connector No.	E152
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Connector No.	E162
Connector Name	FRONT SONAR SENSOR LH INNER
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	LG/B	-
2	O	-
3	Y	-

Connector No.	E160
Connector Name	WIRE TO WIRE
Connector Color	GRAY



Terminal No.	Color of Wire	Signal Name
1	LG/B	-
2	LG	-
3	Y	-

Connector No.	E159
Connector Name	WIRE TO WIRE
Connector Color	GRAY



Terminal No.	Color of Wire	Signal Name
1	LG/B	-
2	O	-
3	Y	-

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SONAR SYSTEM

< WIRING DIAGRAM >

Connector No.	E165
Connector Name	WIRE TO WIRE
Connector Color	GRAY



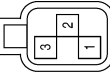
Terminal No.	Color of Wire	Signal Name
1	LG/B	-
2	LG	-
3	Y	-

Connector No.	E164
Connector Name	WIRE TO WIRE
Connector Color	GRAY



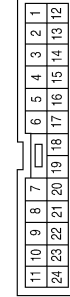
Terminal No.	Color of Wire	Signal Name
1	LG/B	-
2	O	-
3	Y	-

Connector No.	E163
Connector Name	FRONT SONAR SENSOR RH INNER
Connector Color	BLACK



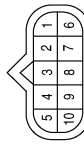
Terminal No.	Color of Wire	Signal Name
1	LG/B	-
2	LG	-
3	Y	-

Connector No.	F14
Connector Name	WIRE TO WIRE
Connector Color	WHITE



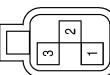
Terminal No.	Color of Wire	Signal Name
13	R	-

Connector No.	F9
Connector Name	A/T ASSEMBLY
Connector Color	GREEN



Terminal No.	Color of Wire	Signal Name
7	R	-

Connector No.	E166
Connector Name	FRONT SONAR SENSOR RH OUTER
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	LG/B	-
2	GR	-
3	Y	-

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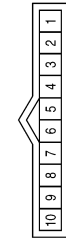
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SONAR SYSTEM

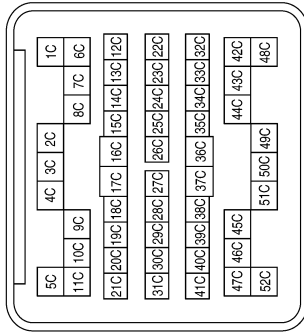
< WIRING DIAGRAM >

Connector No.	F502
Connector Name	TCM (TRANSMISSION CONTROL MODULE)
Connector Color	GRAY



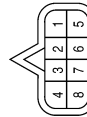
Terminal No.	Color of Wire	Signal Name
7	R	REV LAMP RLY

Connector No.	C1
Connector Name	WIRE TO WIRE
Connector Color	GRAY



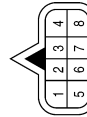
Terminal No.	Color of Wire	Signal Name
22C	Y	-
23C	LG/B	-
38C	GR	-
39C	LG	-
40C	O	-
41C	P	-

Connector No.	C3
Connector Name	WIRE TO WIRE
Connector Color	GRAY



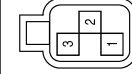
Terminal No.	Color of Wire	Signal Name
2	O	-
3	P	-
4	Y	-
6	GR	-
7	LG	-
8	LG/B	-

Connector No.	C101
Connector Name	WIRE TO WIRE
Connector Color	GRAY



Terminal No.	Color of Wire	Signal Name
2	O	-
3	P	-
4	Y	-
6	GR	-
7	LG	-
8	LG/B	-

Connector No.	C102
Connector Name	REAR SONAR SENSOR LH OUTER
Connector Color	BLACK

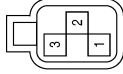


Terminal No.	Color of Wire	Signal Name
1	LG/B	-
2	P	-
3	Y	-

SONAR SYSTEM

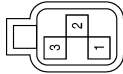
< WIRING DIAGRAM >

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



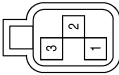
Terminal No.	Color of Wire	Signal Name
1	LG/B	-
2	GR	-
3	Y	-

Connector No.	C104
Connector Name	REAR SONAR SENSOR RH INNER
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	LG/B	-
2	LG	-
3	Y	-

Connector No.	C103
Connector Name	REAR SONAR SENSOR LH INNER
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	LG/B	-
2	O	-
3	Y	-

Connector No.	B43
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
11	L	-
12	R	-
13	G/W	-
14	GR/R	-
15	W/R	-

Connector No.	B41
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
6	GR	-
7	LG	-
8	O	-
9	P	-
10	Y	-
11	LG/B	-
12	G/W	-

Connector No.	B40
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
16	LG/B	-
17	Y	-
18	P	-
19	O	-
21	LG	-
22	GR	-

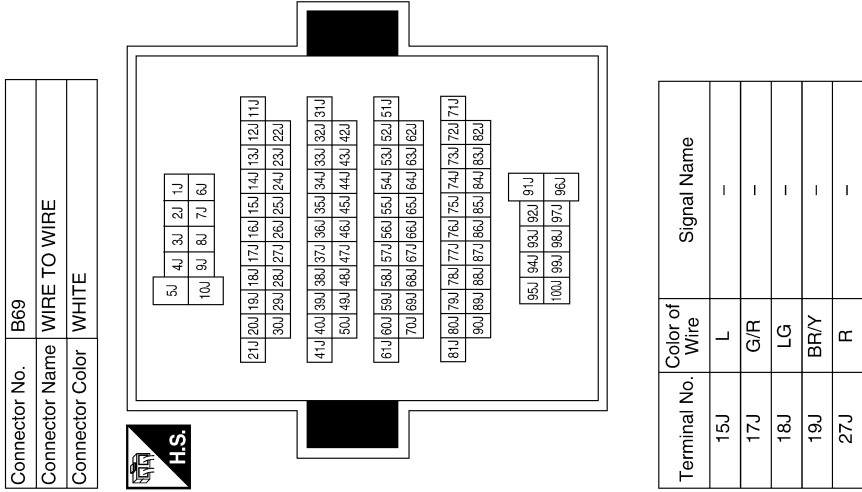
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SONAR SYSTEM

< WIRING DIAGRAM >



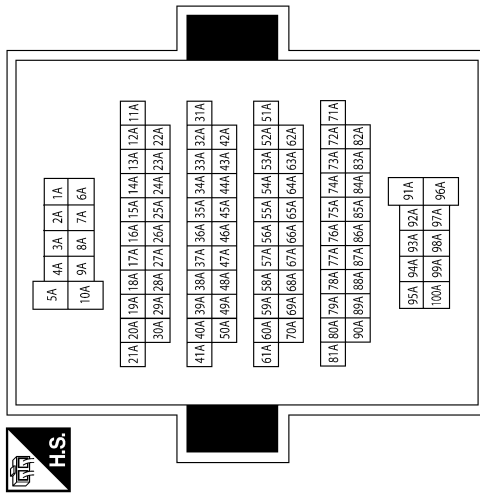
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SONAR SYSTEM

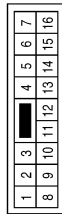
< WIRING DIAGRAM >

Terminal No.	Color of Wire	Signal Name
19A	G/W	-
20A	GR/R	-
30A	W/R	-

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



Connector No.	B111
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
11	L	-
12	R	-
13	G/W	-
14	GR/R	-
15	W/R	-

Connector No.	B166
Connector Name	REAR SONAR BUZZER
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	L	-
2	R	-

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C
D
E
F
G
H
I
J
K
L
M
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P

SN

SONAR SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

SONAR SYSTEM SYMPTOMS

Symptom Table

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NOTE:

Always perform Preliminary Check and Self-Diagnosis Function before diagnosing vehicle by symptom. Refer to [SN-6, "Preliminary Check"](#) and [SN-8, "Self-Diagnosis Function"](#) (with rear only sonar system) or [SN-13, "CONSULT Function \(SONAR\)"](#) (with front and rear sonar system).

Symptom	Repair order
When the transmission gear selector lever is in the R position and the sonar system is ON, the rear sonar system does not operate.	<ol style="list-style-type: none"> 1. Check sonar control unit power and ground circuits. Refer to SN-15, "Diagnosis Procedure (With Rear Only Sonar System)" or SN-15, "Diagnosis Procedure (With Front and Rear Sonar System)". 2. Check transmission range switch. Refer to TM-47, "Diagnosis Procedure". 3. Check back-up lamp relay. 4. Check related harness and connections for back-up lamp relay. 5. Check rear sonar sensors. Refer to SN-17, "Component Function Check (With Front and Rear Sonar System)". 6. Check rear sonar buzzer. Refer to SN-20, "Component Function Check (With Front and Rear Sonar System)". 7. Replace sonar control unit. Refer to SN-53, "Removal and Installation".
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)	<ol style="list-style-type: none"> 1. Check sonar control unit power and ground circuits. Refer to SN-15, "Diagnosis Procedure (With Front and Rear Sonar System)". 2. Check harness and connections between sonar control unit and combination meter. 3. Check front sonar sensors. Refer to SN-17, "Component Function Check (With Front and Rear Sonar System)". 4. Check front sonar buzzer. Refer to SN-20, "Component Function Check (With Front and Rear Sonar System)". 5. Replace sonar control unit. Refer to SN-53, "Removal and Installation".
Sonar Control Unit will not enter Diagnostic Mode (no communication).	<ol style="list-style-type: none"> 1. Check sonar control unit power and ground circuits. Refer to SN-15, "Diagnosis Procedure (With Rear Only Sonar System)" or SN-15, "Diagnosis Procedure (With Front and Rear Sonar System)". 2. Check K-Line to data link connector (with Front and Rear sonar system). 3. Check harness and connections for sonar system OFF switch. Refer to SN-22, "Diagnosis Procedure (With Rear Only Sonar System)" or SN-23, "Diagnosis Procedure (With Front and Rear Sonar System)". 4. Replace sonar control unit. Refer to SN-53, "Removal and Installation".
Buzzer sounds although there are no obstacles within the detection range (false detection).	<ol style="list-style-type: none"> 1. Check all sonar sensors for misalignment or damage (including bumper and fascia). Refer to SN-6, "Preliminary Check". 2. Check all sonar sensors for dirt or ice buildup. Refer to SN-6, "Preliminary Check". 3. Check sonar sensors. Refer to SN-17, "Diagnosis Procedure (With Rear Only Sonar System)" or SN-17, "Diagnosis Procedure (With Front and Rear Sonar System)". 4. Replace sonar control unit. Refer to SN-53, "Removal and Installation".

SONAR SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

Symptom	Repair order
When sonar system is ON, the sonar system OFF indicator lamp lights up and the sonar buzzer sounds intermittently (for about 4 seconds). (With rear only sonar system)	<ol style="list-style-type: none"> 1. Check sonar sensors. Refer to SN-6, "Preliminary Check". 2. Check harnesses between sonar sensors and sonar control unit for an open condition. Refer to SN-17, "Diagnosis Procedure (With Rear Only Sonar System)". 3. Replace sonar control unit. Refer to SN-53, "Removal and Installation".
The sonar system still operates when the sonar system OFF indicator lamp is ON.	<ol style="list-style-type: none"> 1. Check sonar system OFF indicator lamp. Refer to SN-22, "Component Function Check (With Front and Rear Sonar System)". 2. Replace sonar control unit. Refer to SN-53, "Removal and Installation".
The sonar sensors do not detect objects within the detectable range (intermittent operation).	<ol style="list-style-type: none"> 1. Check sonar sensors. Refer to SN-6, "Preliminary Check" and SN-18, "Component Inspection (With Front and Rear Sonar System)". 2. Replace sonar control unit. Refer to SN-53, "Removal and Installation".
When the sonar system is OFF, the OFF indicator does not light and the sonar buzzer does not sound.	<ol style="list-style-type: none"> 1. Check sonar system OFF switch. Refer to SN-24, "Component Inspection". 2. Check harness and connections for sonar system OFF switch. Refer to SN-22, "Diagnosis Procedure (With Rear Only Sonar System)" or SN-23, "Diagnosis Procedure (With Front and Rear Sonar System)". 3. Replace sonar control unit. Refer to SN-53, "Removal and Installation".
When the sonar system is OFF, the OFF indicator lamp does not light but the sonar buzzer does sound.	<ol style="list-style-type: none"> 1. Check sonar system OFF indicator lamp. Refer to SN-24, "Component Inspection". 2. Check harness and connections for sonar system OFF indicator lamp. Refer to SN-22, "Diagnosis Procedure (With Rear Only Sonar System)" or SN-23, "Diagnosis Procedure (With Front and Rear Sonar System)". 3. Replace sonar control unit. Refer to SN-53, "Removal and Installation".
When the sonar system is OFF, the sonar buzzer does not sound but the OFF indicator lamp lights.	<ol style="list-style-type: none"> 1. Check sonar buzzer. Refer to SN-21, "Component Inspection". 2. Check harness and connections between sonar buzzer and sonar control unit. Refer to SN-20, "Diagnosis Procedure (With Rear Only Sonar System)" or SN-21, "Diagnosis Procedure (With Front and Rear Sonar System)". 3. Replace sonar control unit. Refer to SN-53, "Removal and Installation".

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B
C
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G
H
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K
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SN

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P

PRECAUTION

< PRECAUTION >

PRECAUTION

PRECAUTION

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

INFOID:000000008633227

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.

Precaution Necessary for Steering Wheel Rotation After Battery Disconnect

INFOID:000000008633228

NOTE:

- This Procedure is applied only to models with Intelligent Key system and NATS (NISSAN ANTI-THEFT SYSTEM).
- Remove and install all control units after disconnecting both battery cables with the ignition knob in the "LOCK" position.
- Always use CONSULT to perform self-diagnosis as a part of each function inspection after finishing work. If DTC is detected, perform trouble diagnosis according to self-diagnostic results.

For models equipped with the Intelligent Key system and NATS, an electrically controlled steering lock mechanism is adopted on the key cylinder.

For this reason, if the battery is disconnected or if the battery is discharged, the steering wheel will lock and steering wheel rotation will become impossible.

If steering wheel rotation is required when battery power is interrupted, 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. Use the Intelligent Key or mechanical key to turn the ignition switch to the "ACC" position. At this time, the steering lock will be released.
3. Disconnect both battery cables. The steering lock will remain released and the steering wheel can be rotated.
4. Perform the necessary repair operation.

PRECAUTION

< PRECAUTION >

5. When the repair work is completed, return the ignition switch to the "LOCK" position before connecting the battery cables. (At this time, the steering lock mechanism will engage.)
6. Perform a self-diagnosis check of all control units using CONSULT.

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B

C

D

E

F

G

H

I

J

K

L

M

SN

O

P

SONAR SENSOR

< UNIT REMOVAL AND INSTALLATION >

UNIT REMOVAL AND INSTALLATION

SONAR SENSOR

Removal and Installation

INFOID:000000008633229

FRONT SONAR SENSOR

Removal

1. Remove the front bumper fascia. Refer to [EXT-15. "Removal and Installation"](#).
2. Remove the front sonar sensor from the front bumper fascia.
3. Disconnect the harness connector from the front sonar sensor.
4. Remove the front sonar sensor housing from the front bumper fascia.

Installation

Installation is in the reverse order of removal.

REAR SONAR SENSOR

Removal

1. Remove the rear bumper fascia. Refer to [EXT-19. "Removal and Installation"](#).
2. Remove the rear sonar sensor from the rear bumper fascia.
3. Disconnect the harness connector from the rear sonar sensor.
4. Remove the rear sonar sensor housing from the rear bumper fascia.

Installation

Installation is in the reverse order of removal.

SONAR CONTROL UNIT

< UNIT REMOVAL AND INSTALLATION >

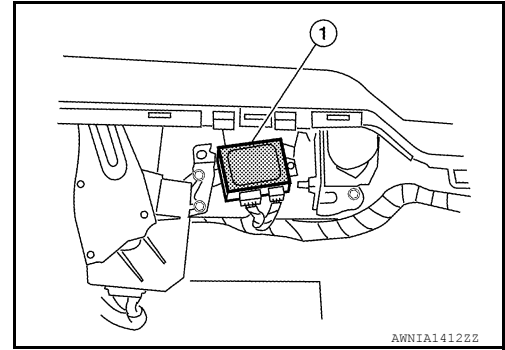
SONAR CONTROL UNIT

Removal and Installation

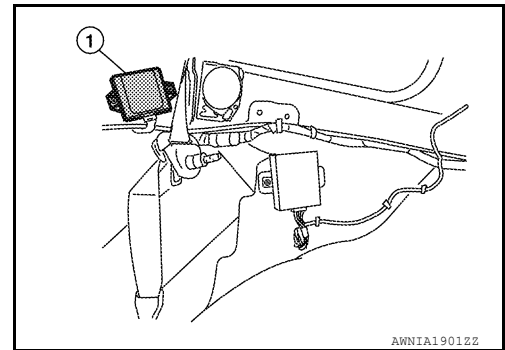
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REMOVAL

1. Remove the luggage side finisher lower (LH). Refer to [INT-24. "Removal and Installation"](#).
 2. Disconnect the harness connectors from the sonar control unit.
 3. Remove the bolt and the sonar control unit.
- Models with front and rear sonar
(1): Front and rear sonar control unit (1)



- Models with rear sonar only
(1): Rear sonar control unit (1)



INSTALLATION

Installation is in the reverse order of removal.

A
B
C
D
E
F
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I
J
K
L
M
N
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BUZZER

< UNIT REMOVAL AND INSTALLATION >

BUZZER

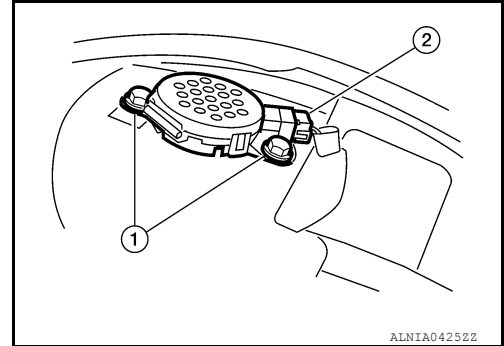
Removal and Installation

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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 harness connector (2) from the front buzzer and remove.



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. For vehicles with rear sonar only, the buzzers is located in the front buzzer location.

Removal

1. Partially remove the rear headlining. Refer to [INT-21, "Removal and Installation"](#).
2. Release the buzzer from the bracket, disconnect the harness connector from the rear buzzer and remove.

Installation

Installation is in the reverse order of removal.