

SECTION **SN**  
SONAR SYSTEM

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
L  
M  
N  
O  
P

CONTENTS

<b>BASIC INSPECTION</b> .....	2	<b>ECU DIAGNOSIS INFORMATION</b> .....	15
<b>DIAGNOSIS AND REPAIR WORKFLOW</b> .....	2	<b>SONAR CONTROL UNIT FOR REAR SONAR SYSTEM</b> .....	15
Work Flow .....	2	Reference Value .....	15
<b>INSPECTION AND ADJUSTMENT</b> .....	4	DTC Index .....	16
Preliminary Check .....	4	<b>WIRING DIAGRAM</b> .....	17
<b>SYSTEM DESCRIPTION</b> .....	5	<b>SONAR SYSTEM</b> .....	17
<b>REAR SONAR SYSTEM</b> .....	5	Wiring Diagram .....	17
System Diagram .....	5	<b>SYMPTOM DIAGNOSIS</b> .....	24
System Description .....	5	<b>SONAR SYSTEM SYMPTOMS</b> .....	24
Component Parts Location .....	6	Symptom Table .....	24
Component Description .....	6	<b>PRECAUTION</b> .....	26
Self-Diagnosis Function .....	6	<b>PRECAUTION</b> .....	26
<b>DTC/CIRCUIT DIAGNOSIS</b> .....	9	Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER" .....	26
<b>POWER SUPPLY AND GROUND CIRCUIT</b> .....	9	Precaution Necessary for Steering Wheel Rotation after Battery Disconnect .....	26
Diagnosis Procedure For Rear Sonar System .....	9	<b>UNIT REMOVAL AND INSTALLATION</b> .....	28
<b>SONAR SENSOR CIRCUIT INSPECTION</b> .....	10	<b>SONAR SENSOR</b> .....	28
Description .....	10	Removal and Installation .....	28
Diagnosis Procedure .....	10	<b>SONAR CONTROL UNIT</b> .....	29
<b>SONAR BUZZER CIRCUIT INSPECTION</b> .....	11	Removal and Installation .....	29
Description .....	11	<b>BUZZER</b> .....	30
Diagnosis Procedure .....	11	Removal and Installation .....	30
Component Inspection .....	11		
<b>SONAR SYSTEM OFF SWITCH CIRCUIT INSPECTION</b> .....	13		
Description .....	13		
Diagnosis Procedure .....	13		
Component Inspection .....	13		

# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

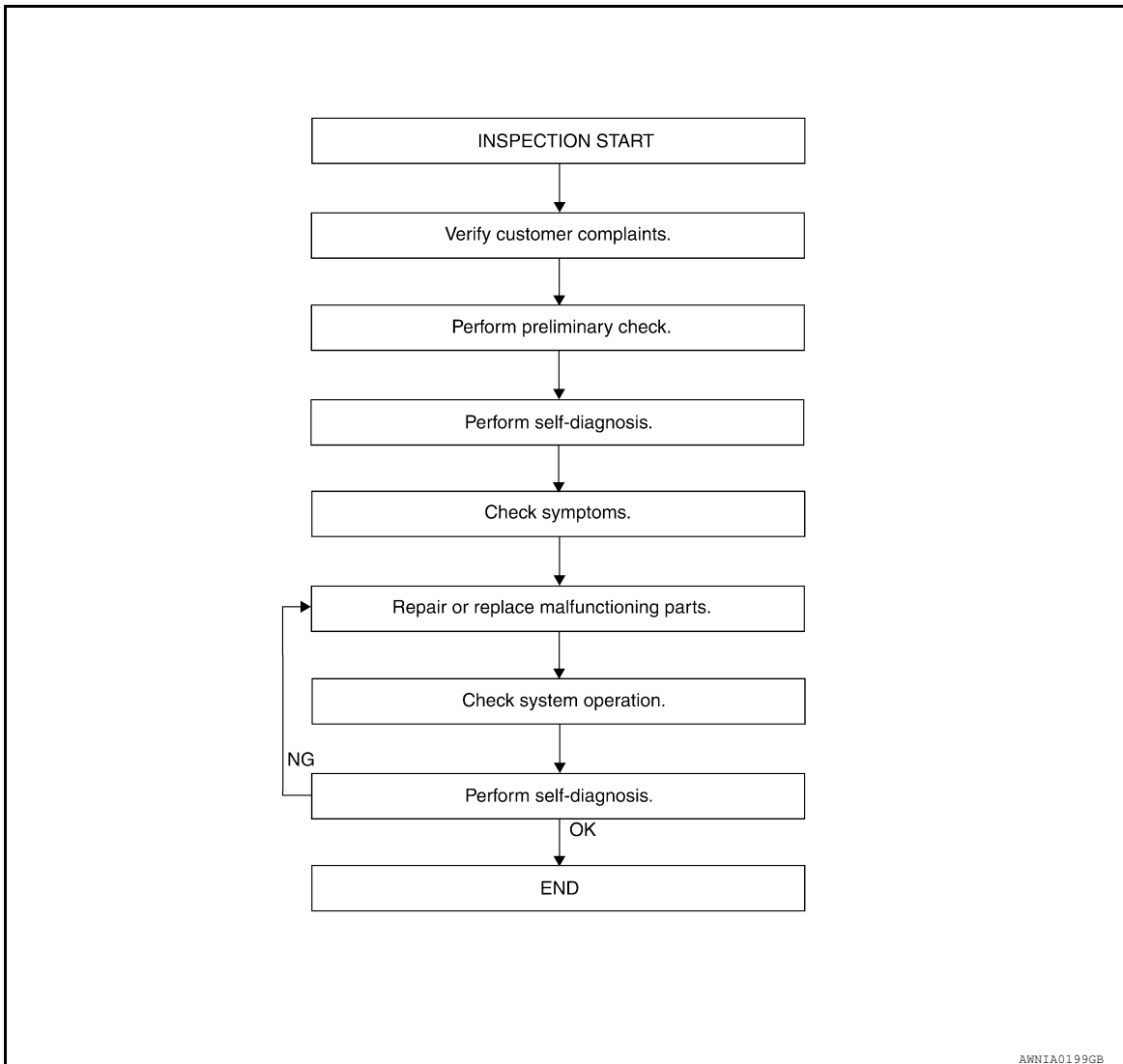
## BASIC INSPECTION

### DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000007419077

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-4. "Preliminary Check"](#).

>> GO TO 3

#### 3. SELF-DIAGNOSIS

Perform self-diagnosis. Refer to [SN-6. "Self-Diagnosis Function"](#).

# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

---

>> GO TO 4

## 4.SYMPTOM

---

Check for symptoms. Refer to [SN-24. "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-4. "Preliminary Check"](#).

>> GO TO 7

## 7.SELF-DIAGNOSIS

---

Perform self-diagnosis. Refer to [SN-6. "Self-Diagnosis Function"](#).

Are any fault codes displayed?

YES >> GO TO 5

NO >> Inspection End.

A

B

C

D

E

F

G

H

I

J

K

L

M

SN

O

P

# INSPECTION AND ADJUSTMENT

< BASIC INSPECTION >

## INSPECTION AND ADJUSTMENT

### Preliminary Check

INFOID:000000007419078

#### 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
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.

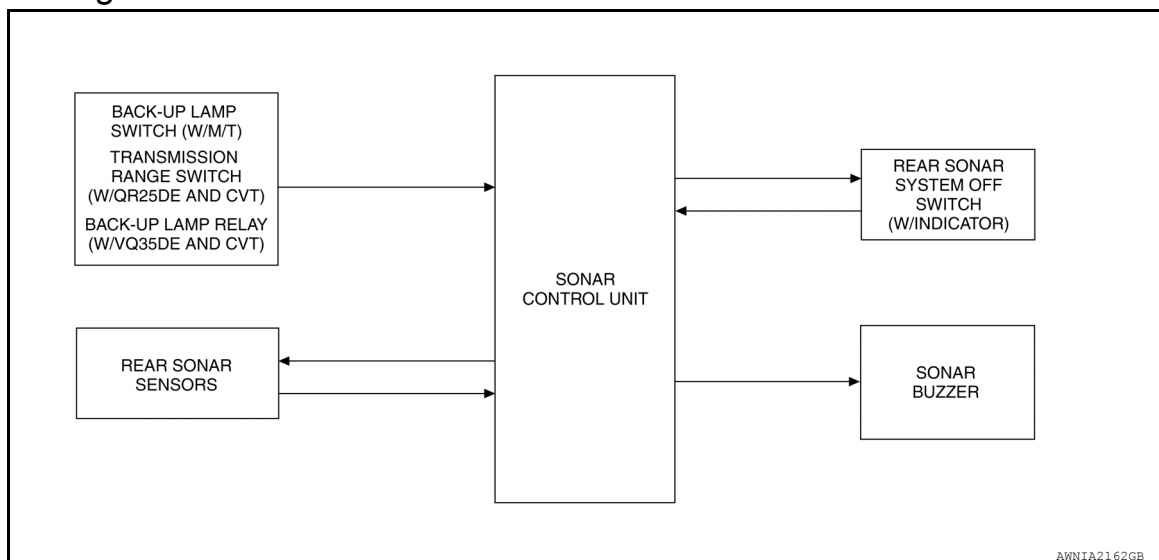
# REAR SONAR SYSTEM

< SYSTEM DESCRIPTION >

## SYSTEM DESCRIPTION

### REAR SONAR SYSTEM

#### System Diagram



#### System Description

INFOID:000000007419080

#### FUNCTION

With power and ground supplied, transmission gear selector lever in R position, and the rear sonar system OFF switch ON (when indicator lamp is not illuminated), 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.

#### REAR 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 rear sonar system OFF switch. The sonar system OFF indicator lamp will be illuminated in the rear 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 rear 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 sonar control unit detects 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 transmission gear 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 SWITCH (WITH M/T)

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

#### TRANSMISSION RANGE SWITCH (WITH QR25DE and CVT)

The transmission range switch provides a reverse signal to the sonar control unit.

#### BACK-UP LAMP RELAY (WITH VQ35DE and CVT)

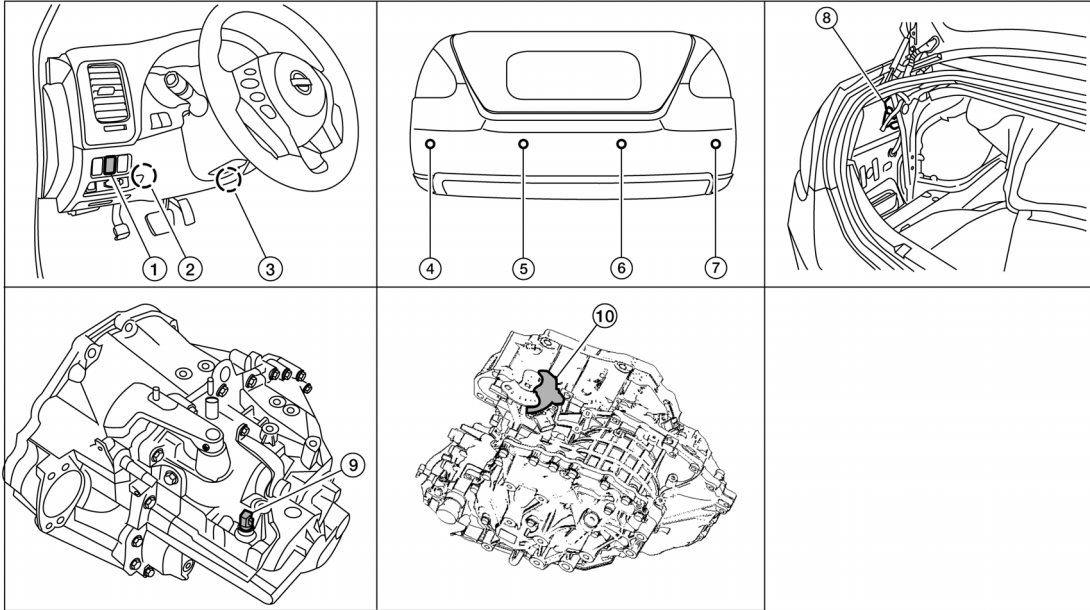
# REAR SONAR SYSTEM

## < SYSTEM DESCRIPTION >

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

## Component Parts Location

INFOID:000000007419081



AMNIA21632Z

- |  |   |  |
|--|---|--|
| 1. Rear sonar system OFF switch M39  | 2. Back-up lamp relay E34   | 3. Sonar buzzer M41  |
| 4. Rear sonar sensor LH outer B402   | 5. Rear sonar sensor LH inner B403                                      | 6. Rear sonar sensor RH inner B404   |
| 7. Rear sonar sensor RH outer B405   | 8. Sonar control unit B24<br>(view with trunk side finisher LH removed) | 9. Back-up lamp switch F24<br>(with M/T)<br>(view with transmission removed) |
| 10. Transmission range switch F25<br>(with CVT)<br>(view with CVT removed) |   |  |

## Component Description

INFOID:000000007419082

Component	Function
Sonar control unit	Controls sonar system and provides self-diagnosis
Back-up lamp switch (with M/T)	Provides reverse signal for sonar control unit
Back-up lamp relay (with VQ35DE and CVT)	
Transmission range switch (with QR25DE and CVT)	
TCM	Controls back-up lamp relay
Sonar buzzer	Sounds a signal when objects are detected in the rear of the vehicle
Rear sonar system OFF switch	Enables the driver to turn system off and signals a system malfunction
Rear sonar sensor	Senses objects in the rear of the vehicle

## Self-Diagnosis Function

INFOID:000000007419083

### NOTE:

Always perform Preliminary Check before running Self-Diagnosis Function. Refer to [SN-4. "Preliminary Check"](#).

# REAR SONAR SYSTEM

## < SYSTEM DESCRIPTION >

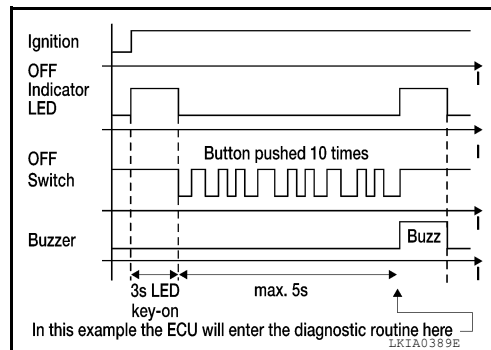
There are four modes of self-diagnosis. These modes must be followed in the following order:

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

1. Turn ignition switch ON. Rear sonar system OFF switch indicator lamp illuminates for three seconds and then turns off.
2. Immediately push rear 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.



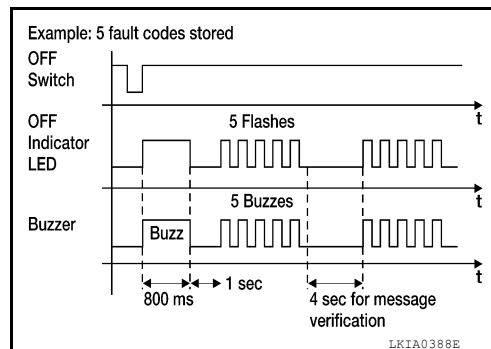
### REQUESTING NUMBER OF FAULT CODES MODE

1. While in "entering diagnostic mode", push rear 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 second pause.
5. The number of fault codes will repeat five times then pause.

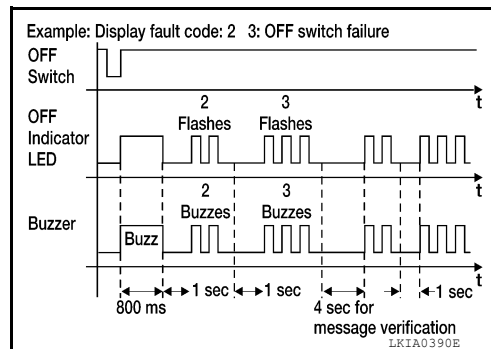


**NOTE:**

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 rear 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 second 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 rear 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-16, "DTC Index"](#).

### CLEARING FAULT CODES MODE

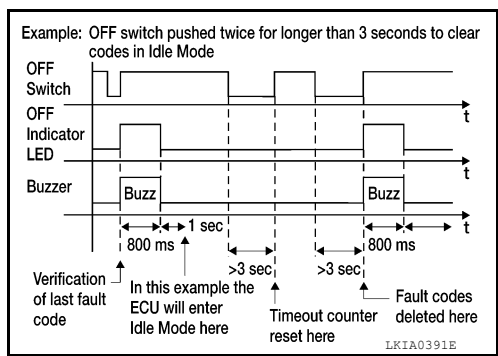
**NOTE:**

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

# REAR SONAR SYSTEM

## < SYSTEM DESCRIPTION >

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





# POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

## DTC/CIRCUIT DIAGNOSIS

### POWER SUPPLY AND GROUND CIRCUIT

#### Diagnosis Procedure For Rear Sonar System

INFOID:000000007419084

Regarding Wiring Diagram information, refer to [SN-17. "Wiring Diagram"](#).

#### INSPECTION FOR POWER SUPPLY AND GROUND CIRCUIT

##### 1. CHECK FUSES

Check for blown rear sonar system fuses.

Component	Power Source	Fuse	Location
Sonar control unit	ON or START	3	Fuse block (J/B)
Back-Up lamp switch (with M/T)		4	
Transmission range switch (with QR25DE and CVT)			
Back-Up lamp relay (with VQ35DE and CVT)			

##### Are any fuses blown?

YES >> If fuse is blown, be sure to eliminate cause of malfunction before installing new fuse.

NO >> GO TO 2.

##### 2. CHECK POWER SUPPLY CIRCUIT

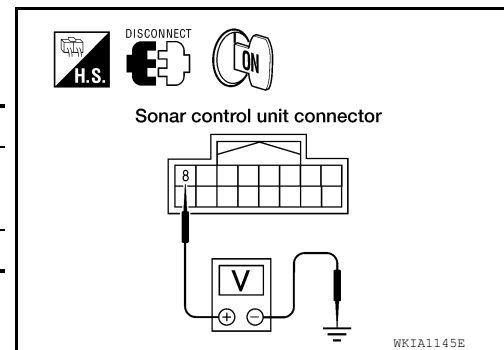
1. Disconnect sonar control unit connector.
2. Turn ignition switch ON.
3. Check voltage between sonar control unit connector B24 terminal 8 and ground.

Terminals		Ignition switch position	
(+) Terminal		(-) Terminal	Ignition switch position
Connector	Terminal		ON or 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

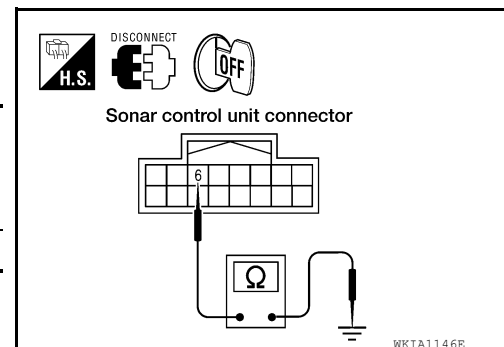
1. Turn ignition switch OFF.
2. Check continuity between sonar control unit B24 terminal 6 and ground.

Terminals		Continuity	
(+) Terminal		(-) Terminal	Continuity
Connector	Terminal		
B24	6	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:000000007419085

With power and ground supplied to the rear sonar sensors, the rear sonar sensors transmit an ultrasonic signal. This signal is reflected back to the rear sonar 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 send this information to the sonar control unit. Refer to [SN-5. "System Description"](#) for more details.

### Diagnosis Procedure

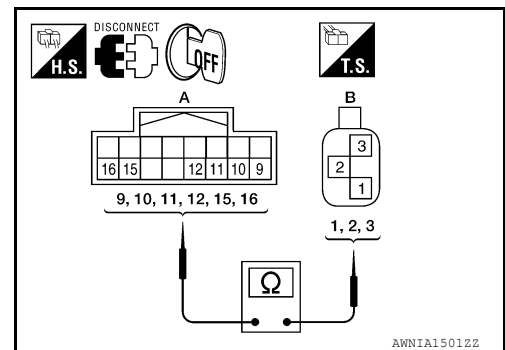
INFOID:000000007419086

Regarding Wiring Diagram information, refer to [SN-17. "Wiring Diagram"](#).

### 1. CHECK REAR SONAR SENSOR CIRCUITS

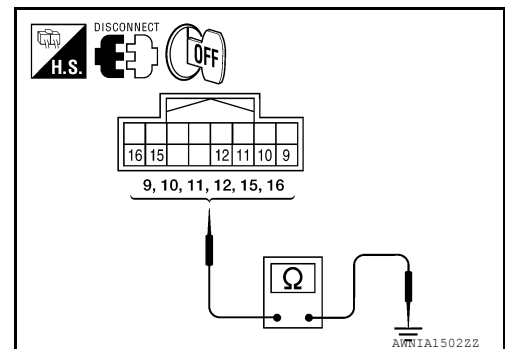
1. Turn ignition switch OFF.
2. Disconnect sonar control unit connector and rear sonar sensor connectors.
3. Check continuity between sonar control unit harness connector (A) and rear sonar sensor harness connectors (B).

Connector	Terminal	Connector	Terminal	Continuity
B24 (A)	16	B402, B403, B404, B405 (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.

# SONAR BUZZER CIRCUIT INSPECTION

< DTC/CIRCUIT DIAGNOSIS >

## SONAR BUZZER CIRCUIT INSPECTION

### Description

INFOID:000000007419087

When the transmission selector lever is in the R position, a stationary object 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 very close to the vehicle, the tone will sound continuously.

### Diagnosis Procedure

INFOID:000000007419088

Regarding Wiring Diagram information, refer to [SN-17. "Wiring Diagram"](#).

### 1. CHECK SONAR BUZZER

Refer to [SN-11. "Component Inspection"](#).

Is the inspection result normal?

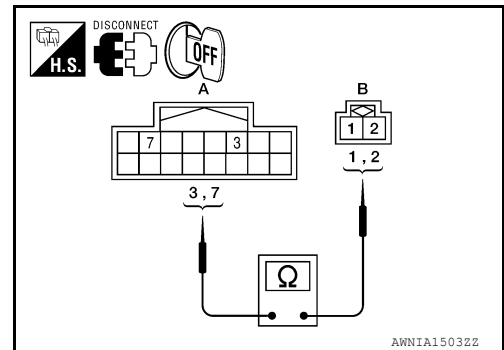
YES >> GO TO 2.

NO >> Replace sonar buzzer. Refer to [SN-30. "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	M41 (B)	1	Yes
	7		2	



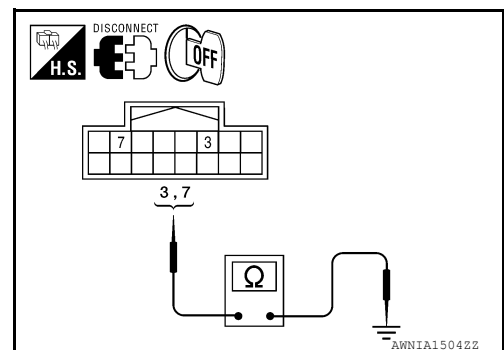
4. Check continuity between sonar control unit harness connector and ground.

Connector	Terminal	Continuity
B24	3, 7	No

Are the inspection results normal?

YES >> Inspection End.

NO >> Repair harness or connector.



### Component Inspection

INFOID:000000007419089

### SONAR BUZZER

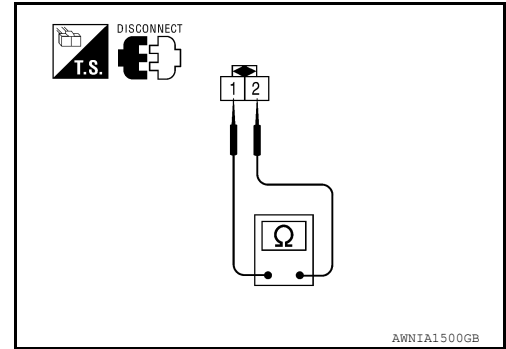
# SONAR BUZZER CIRCUIT INSPECTION

## < DTC/CIRCUIT DIAGNOSIS >

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

1 - 2

: 50  $\Omega$  (+/- 10  $\Omega$ )



# SONAR SYSTEM OFF SWITCH CIRCUIT INSPECTION

< DTC/CIRCUIT DIAGNOSIS >

## SONAR SYSTEM OFF SWITCH CIRCUIT INSPECTION

### Description

INFOID:000000007419090

The sonar system can be disabled by momentarily pressing the rear sonar system OFF switch. The sonar system OFF indicator lamp will be illuminated when the rear 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

INFOID:000000007419091

Regarding Wiring Diagram information, refer to [SN-17. "Wiring Diagram"](#).

### 1. CHECK REAR SONAR SYSTEM OFF SWITCH

Refer to [SN-13. "Component Inspection"](#).

Is the inspection result normal?

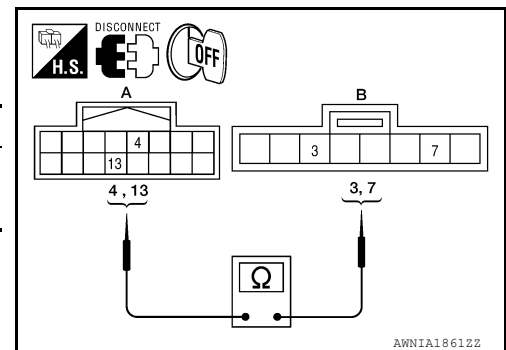
YES >> GO TO 2.

NO >> Replace rear sonar system OFF switch. Refer to [IP-12. "Removal and Installation - Instrument Panel"](#).

### 2. CHECK REAR SONAR SYSTEM OFF SWITCH CIRCUITS

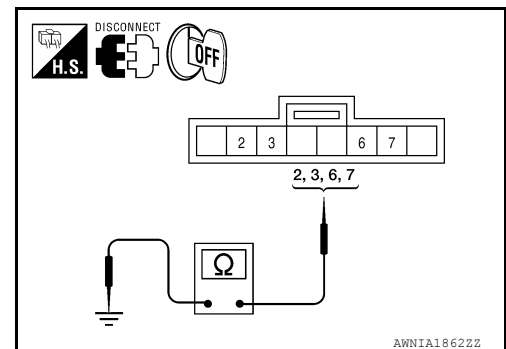
1. Turn ignition switch OFF.
2. Disconnect sonar control unit connector and rear sonar system OFF switch connector.
3. Check continuity between sonar control unit harness connector (A) and rear sonar system OFF switch harness connector (B).

Connector	Terminal	Connector	Terminal	Continuity
B24 (A)	4	M39 (B)	3	Yes
	13		7	



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

Connector	Terminal	Continuity
M39	3, 7	No
	2, 6	Yes



Are the inspection results normal?

YES >> Inspection End.

NO >> Repair harness or connector.

### Component Inspection

INFOID:000000007419092

#### REAR SONAR SYSTEM OFF SWITCH

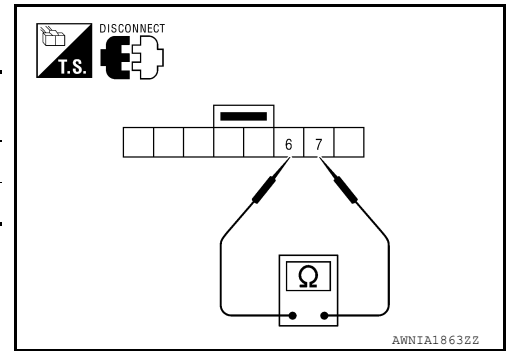
1. Disconnect the rear sonar system OFF switch connector M39.

# SONAR SYSTEM OFF SWITCH CIRCUIT INSPECTION

## < DTC/CIRCUIT DIAGNOSIS >

2. Check continuity between the following switch terminals.

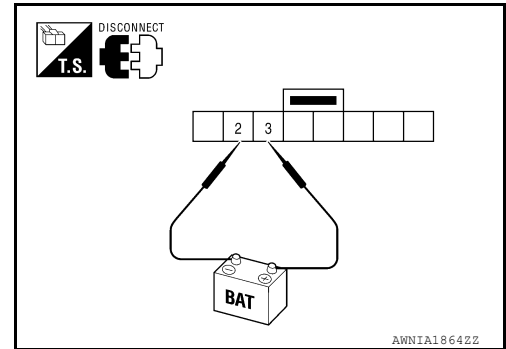
Rear sonar system OFF switch	Terminals	Continuity
Depressed	6 - 7	Yes
Released		No



## SONAR SYSTEM OFF INDICATOR

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

	Terminals	Condition	Operation
Rear sonar system OFF switch	3	Battery voltage	Indicator ON
	2	Ground	



# SONAR CONTROL UNIT FOR REAR SONAR SYSTEM

< ECU DIAGNOSIS INFORMATION >

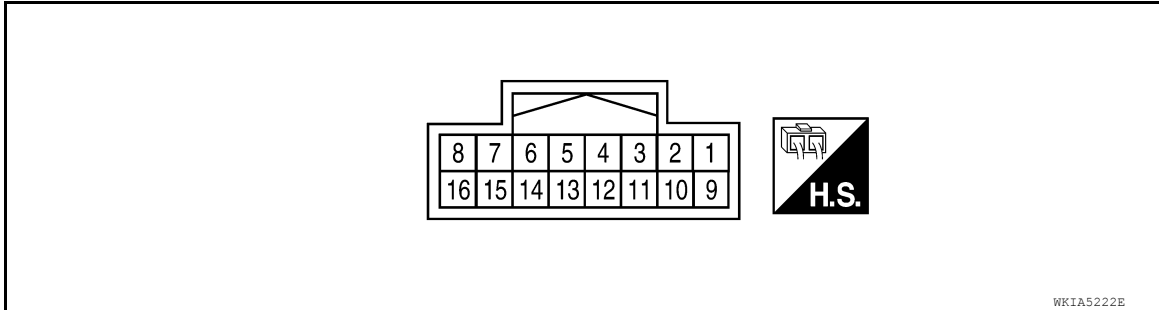
## ECU DIAGNOSIS INFORMATION

### SONAR CONTROL UNIT FOR REAR SONAR SYSTEM

Reference Value

INFOID:000000007419093

#### 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 (GR)	Sonar buzzer return	ON	—	0 - 12 (variable)	
4 (O)	Sonar system OFF indicator output	ON	Rear sonar system OFF switch	ON	0
				OFF	Battery voltage
5 (V)	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 (Y)	Sonar buzzer drive signal	ON	—	Battery voltage	
8 (R)	Sonar control unit power	ON	—	Battery voltage	
9 (W)	Rear sonar sensor signal - RH outer	ON	<ul style="list-style-type: none"> <li>• Rear sonar system OFF switch ON</li> <li>• Transmission gear selector lever in R po- sition</li> <li>• No obstacles</li> </ul>	Battery voltage	
10 (P)	Rear sonar sensor signal - LH outer	ON	<ul style="list-style-type: none"> <li>• Rear sonar system OFF switch ON</li> <li>• Transmission gear selector lever in R po- sition</li> <li>• No obstacles</li> </ul>	Battery voltage	
11 (R)	Rear sonar sensor signal - LH inner	ON	<ul style="list-style-type: none"> <li>• Rear sonar system OFF switch ON</li> <li>• Transmission gear selector lever in R po- sition</li> <li>• Distance obstacles</li> </ul>	Battery voltage	
12 (Y)	Rear sonar sensor signal - RH inner	ON	<ul style="list-style-type: none"> <li>• Rear sonar system OFF switch ON</li> <li>• Transmission gear selector lever in R po- sition</li> <li>• Distance obstacles</li> </ul>	Battery voltage	
13 (P)	Sonar system OFF switch signal	ON	Rear sonar system OFF switch	ON	0
				OFF	Battery voltage

# SONAR CONTROL UNIT FOR REAR SONAR SYSTEM

## < ECU DIAGNOSIS INFORMATION >

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

## DTC Index

INFOID:000000007419094

Fault Code	Malfunction	Service Procedure
11	Rear sonar sensor LH outer	<ol style="list-style-type: none"> <li>1. Check harness for open or short.</li> <li>2. Replace sonar sensor. Refer to <a href="#">SN-28, "Removal and Installation"</a>.</li> </ol>
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"> <li>1. Refer to <a href="#">SN-11, "Diagnosis Procedure"</a>.</li> <li>2. Check harness for open or short.</li> <li>3. Refer to <a href="#">SN-24, "Symptom Table"</a>.</li> </ol>
22	Rear sonar system OFF indicator	<ol style="list-style-type: none"> <li>1. Refer to <a href="#">SN-13, "Diagnosis Procedure"</a>.</li> <li>2. Check harness for open or short.</li> <li>3. Refer to symptom table.</li> </ol>
23	Rear sonar system OFF switch	
24	Sonar control unit	Replace sonar control unit. Refer to <a href="#">SN-29, "Removal and Installation"</a> .



# SONAR SYSTEM

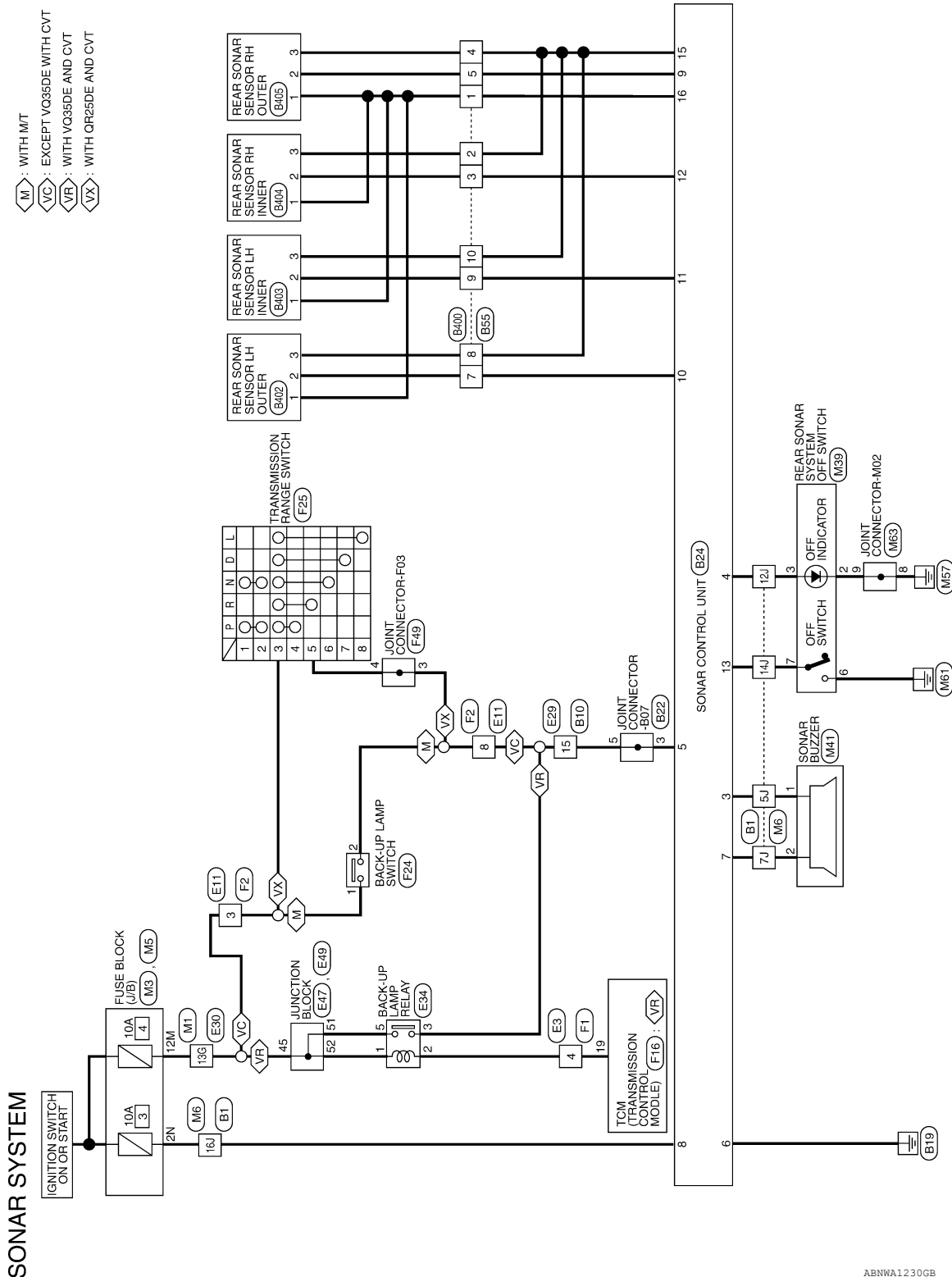
< WIRING DIAGRAM >

## WIRING DIAGRAM

### SONAR SYSTEM

#### Wiring Diagram

INFOID:000000007419095



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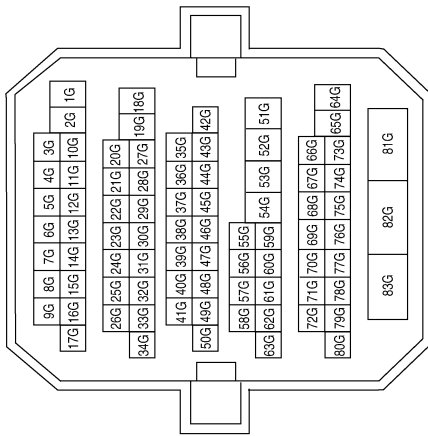
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# SONAR SYSTEM

< WIRING DIAGRAM >

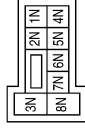
## SONAR SYSTEM CONNECTORS

Connector No.	M1
Connector Name	WIRE TO WIRE
Connector Color	WHITE



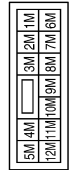
Terminal No.	13G	Color of Wire	O	Signal Name	-
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Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE



Terminal No.	2N	Color of Wire	G	Signal Name	-
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Connector No.	M5
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE



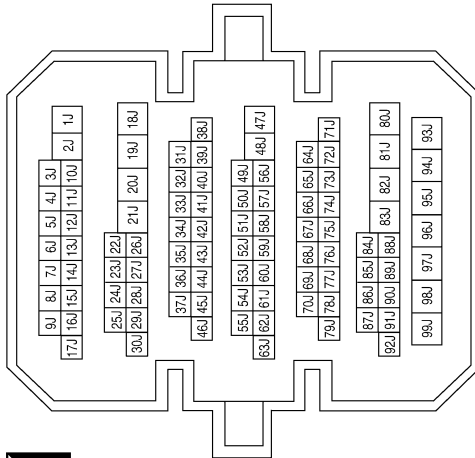
Terminal No.	12M	Color of Wire	O	Signal Name	-
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# SONAR SYSTEM

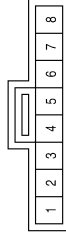
< WIRING DIAGRAM >

Connector No.	M6
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
5J	W	-
7J	LG	-
12J	SB	-
14J	V	-
16J	G	-

Connector No.	M39
Connector Name	REAR SONAR SYSTEM OFF SWITCH
Connector Color	GRAY



Terminal No.	Color of Wire	Signal Name
2	B	-
3	SB	-
6	B	-
7	V	-

Connector No.	M41
Connector Name	SONAR BUZZER
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	W	SOUNDER-
2	LG	SOUNDER+

Connector No.	M63
Connector Name	JOINT CONNECTOR-M02
Connector Color	BLUE



Terminal No.	Color of Wire	Signal Name
8	B	-
9	B	-

Connector No.	E3
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
4	R	-

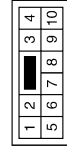
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# SONAR SYSTEM

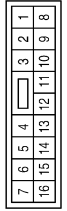
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Connector No.	E11
Connector Name	WIRE TO WIRE
Connector Color	WHITE



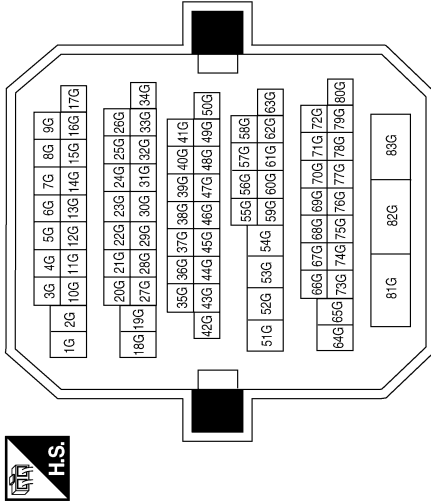
Terminal No.	Color of Wire	Signal Name
3	BR	-
8	W	-

Connector No.	E29
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
15	W	-

Connector No.	E30
Connector Name	WIRE TO WIRE
Connector Color	WHITE



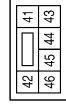
Terminal No.	Color of Wire	Signal Name
13G	BR	-

Connector No.	E34
Connector Name	BACK-UP LAMP RELAY
Connector Color	BLUE



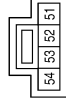
Terminal No.	Color of Wire	Signal Name
1	O	-
2	R	-
3	W	-
5	LG	-

Connector No.	E47
Connector Name	JUNCTION BLOCK
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
45	BR	-

Connector No.	E49
Connector Name	JUNCTION BLOCK
Connector Color	BROWN



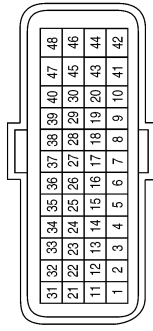
Terminal No.	Color of Wire	Signal Name
51	LG	-
52	O	-

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# SONAR SYSTEM

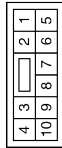
< WIRING DIAGRAM >

Connector No.	F16
Connector Name	TCM (TRANSMISSION CONTROL MODULE)
Connector Color	BLACK



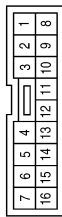
Terminal No.	Color of Wire	Signal Name
19	G	REV LAMP RLY

Connector No.	F2
Connector Name	WIRE TO WIRE
Connector Color	WHITE



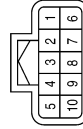
Terminal No.	Color of Wire	Signal Name
3	O	-
8	R	-

Connector No.	F1
Connector Name	WIRE TO WIRE
Connector Color	WHITE



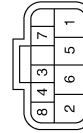
Terminal No.	Color of Wire	Signal Name
4	G	-

Connector No.	F49
Connector Name	JOINT CONNECTOR-F03
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
3	R	-
4	R	-

Connector No.	F25
Connector Name	TRANSMISSION RANGE SWITCH
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
3	O	IGN
5	R	R_OUTPUT

Connector No.	F24
Connector Name	BACK-UP LAMP SWITCH
Connector Color	BLACK



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

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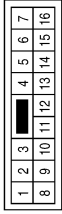
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# SONAR SYSTEM

< WIRING DIAGRAM >

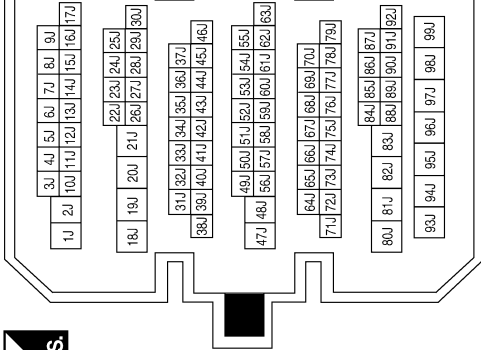
Connector No.	B10
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
15	V	-

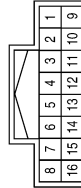
Terminal No.	Color of Wire	Signal Name
5J	GR	-
7J	Y	-
12J	O	-
14J	P	-
16J	R	-

Connector No.	B1
Connector Name	WIRE TO WIRE
Connector Color	WHITE



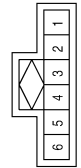
Terminal No.	Color of Wire	Signal Name
8	R	POWER
9	W	SONAR_ROR
10	P	SONAR_ROL
11	R	SONAR_RIL
12	Y	SONAR_RIR
13	P	CANCEL_SW
14	-	-
15	L	SENS_GND
16	GR	SENS_POWER

Connector No.	B24
Connector Name	SONAR CONTROL UNIT
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	-	-
2	-	-
3	GR	SOUNDER-
4	O	STATUS_LED
5	V	REVERS_LAMP_SIGNAL
6	B	GND
7	Y	SOUNDER+

Connector No.	B22
Connector Name	JOINT CONNECTOR-B07
Connector Color	GRAY



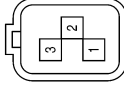
Terminal No.	Color of Wire	Signal Name
3	V	-
5	V	-

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# SONAR SYSTEM

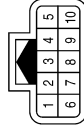
## < WIRING DIAGRAM >

Connector No.	B402
Connector Name	REAR SONAR SENSOR LH OUTER
Connector Color	BLACK



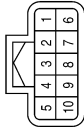
Terminal No.	Color of Wire	Signal Name
1	O	POWER
2	B	SIGNAL
3	GR	GND

Connector No.	B400
Connector Name	WIRE TO WIRE
Connector Color	BLACK



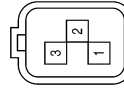
Terminal No.	Color of Wire	Signal Name
1	O	-
2	W	-
3	Y	-
4	L	-
5	P	-
7	B	-
8	GR	-
9	R	-
10	G	-

Connector No.	B55
Connector Name	WIRE TO WIRE
Connector Color	BLACK



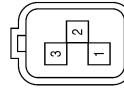
Terminal No.	Color of Wire	Signal Name
1	GR	-
2	L	-
3	Y	-
4	L	-
5	W	-
7	P	-
8	L	-
9	R	-
10	L	-

Connector No.	B405
Connector Name	REAR SONAR SENSOR RH OUTER
Connector Color	BLACK



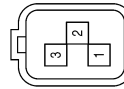
Terminal No.	Color of Wire	Signal Name
1	O	POWER
2	P	SIGNAL
3	L	GND

Connector No.	B404
Connector Name	REAR SONAR SENSOR RH INNER
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	O	POWER
2	Y	SIGNAL
3	W	GND

Connector No.	B403
Connector Name	REAR SONAR SENSOR LH INNER
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	O	POWER
2	R	SIGNAL
3	G	GND

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# SONAR SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

## SYMPTOM DIAGNOSIS

### SONAR SYSTEM SYMPTOMS

#### Symptom Table

INFOID:000000007419096

**NOTE:**

Always perform Preliminary Check and Self-Diagnosis Function before diagnosing vehicle by symptom. Refer to [SN-4, "Preliminary Check"](#) and [SN-6, "Self-Diagnosis Function"](#).

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"> <li>1. Check sonar control unit power and ground circuits. Refer to <a href="#">SN-9, "Diagnosis Procedure For Rear Sonar System"</a>.</li> <li>2. Check back-up lamp switch (with M/T).</li> <li>3. Check transmission range switch (with QR25DE and CVT). Refer to <a href="#">TM-297, "Component Inspection (Transmission Range Switch)"</a>.</li> <li>4. Check back-up lamp relay (with VQ35DE and CVT).</li> <li>5. Check related harness and connections for back-up lamp relay.</li> <li>6. Check rear sonar sensors. Refer to <a href="#">SN-10, "Diagnosis Procedure"</a>.</li> <li>7. Check rear sonar buzzer. Refer to <a href="#">SN-11, "Diagnosis Procedure"</a>.</li> <li>8. Replace sonar control unit. Refer to <a href="#">SN-29, "Removal and Installation"</a>.</li> </ol>
Sonar Control Unit will not enter Diagnostic Mode (no communication).	<ol style="list-style-type: none"> <li>1. Check sonar control unit power and ground circuits. Refer to <a href="#">SN-9, "Diagnosis Procedure For Rear Sonar System"</a>.</li> <li>2. Check harness and connections for sonar system OFF switch. Refer to <a href="#">SN-13, "Diagnosis Procedure"</a>.</li> <li>3. Replace sonar control unit. Refer to <a href="#">SN-29, "Removal and Installation"</a>.</li> </ol>
Buzzer sounds although there are no obstacles within the detection range (false detection).	<ol style="list-style-type: none"> <li>1. Check all sonar sensors for misalignment or damage (including bumper and fascia). Refer to <a href="#">SN-4, "Preliminary Check"</a>.</li> <li>2. Check all sonar sensors for dirt or ice buildup. Refer to <a href="#">SN-4, "Preliminary Check"</a>.</li> <li>3. Check sonar sensors. Refer to <a href="#">SN-10, "Diagnosis Procedure"</a>.</li> <li>4. Replace sonar control unit. Refer to <a href="#">SN-29, "Removal and Installation"</a>.</li> </ol>
When sonar system is ON, the sonar system OFF indicator lamp lights up and the sonar buzzer sounds intermittently (for about 4 seconds).	<ol style="list-style-type: none"> <li>1. Check sonar sensors. Refer to <a href="#">SN-4, "Preliminary Check"</a>.</li> <li>2. Check harnesses between sonar sensors and sonar control unit for an open condition. Refer to <a href="#">SN-10, "Diagnosis Procedure"</a>.</li> <li>3. Replace sonar control unit. Refer to <a href="#">SN-29, "Removal and Installation"</a>.</li> </ol>
The sonar system still operates when the sonar system OFF indicator lamp is ON.	<ol style="list-style-type: none"> <li>1. Check sonar system OFF indicator lamp. Refer to <a href="#">SN-13, "Diagnosis Procedure"</a>.</li> <li>2. Replace sonar control unit. Refer to <a href="#">SN-29, "Removal and Installation"</a>.</li> </ol>
The sonar sensors do not detect objects within the detectable range (intermittent operation).	<ol style="list-style-type: none"> <li>1. Check sonar sensors. Refer to <a href="#">SN-4, "Preliminary Check"</a>.</li> <li>2. Replace sonar control unit. Refer to <a href="#">SN-29, "Removal and Installation"</a>.</li> </ol>
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"> <li>1. Check sonar system OFF switch. Refer to <a href="#">SN-13, "Component Inspection"</a>.</li> <li>2. Check harness and connections for sonar system OFF switch. Refer to <a href="#">SN-13, "Diagnosis Procedure"</a>.</li> <li>3. Replace sonar control unit. Refer to <a href="#">SN-29, "Removal and Installation"</a>.</li> </ol>



# SONAR SYSTEM SYMPTOMS

## < SYMPTOM DIAGNOSIS >

Symptom	Repair order
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"> <li>1. Check sonar system OFF indicator lamp. Refer to <a href="#">SN-13, "Component Inspection"</a>.</li> <li>2. Check harness and connections for sonar system OFF indicator lamp. Refer to <a href="#">SN-13, "Diagnosis Procedure"</a>.</li> <li>3. Replace sonar control unit. Refer to <a href="#">SN-29, "Removal and Installation"</a>.</li> </ol>
When the sonar system is OFF, the sonar buzzer does not sound but the OFF indicator lamp lights.	<ol style="list-style-type: none"> <li>1. Check sonar buzzer. Refer to <a href="#">SN-11, "Component Inspection"</a>.</li> <li>2. Check harness and connections between sonar buzzer and sonar control unit. Refer to <a href="#">SN-11, "Diagnosis Procedure"</a>.</li> <li>3. Replace sonar control unit. Refer to <a href="#">SN-29, "Removal and Installation"</a>.</li> </ol>

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# PRECAUTION

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## PRECAUTION

### PRECAUTION

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

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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:000000007419098

#### **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 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.)
3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
4. Perform the necessary repair operation.

# PRECAUTION

## < PRECAUTION >

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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.)
6. Perform self-diagnosis check of all control units using CONSULT.

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## SONAR SENSOR

< UNIT REMOVAL AND INSTALLATION >

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# UNIT REMOVAL AND INSTALLATION

## SONAR SENSOR

### Removal and Installation

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#### Removal

1. Remove the rear bumper fascia and energy absorbing foam. Refer to [EXT-42. "Removal and Installation"](#)
2. Disconnect the rear sonar connector.
3. Remove the rear sonar sensor from the rear bumper fascia.
  - Disconnect the sonar sensors from the harness.
  - Remove the sonar sensors retainers from the rear fascia assembly.

#### 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 LH trunk side finisher. Refer to [INT-30, "Exploded View"](#).
2. Disconnect the sonar control unit connector.
3. Remove the two bolts and remove the sonar control unit.

#### Installation

Installation is in the reverse order of removal.

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# BUZZER

< UNIT REMOVAL AND INSTALLATION >

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## BUZZER

### Removal and Installation

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#### Buzzer

1. Remove the instrument lower cover (LH). Refer to [IP-11. "Exploded View"](#).
2. Disconnect the buzzer connector.
3. Remove the screw and the buzzer.

#### Installation

Installation is in the reverse order or removal.