

SECTION **SN**
SONAR SYSTEM

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PRECAUTION

< PRECAUTION >

PRECAUTION

PRECAUTION

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

INFOID:000000012590988

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

WARNING:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.
- Improper repair, 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 or batteries, and wait at least three minutes before performing any service.

Precaution for Work

INFOID:000000012590990

- When removing or disassembling each component, be careful not to damage or deform it. If a component may be subject to interference, be sure to protect it with a shop cloth.
- When removing (disengaging) components with a screwdriver or similar tool, be sure to wrap the component with a shop cloth or vinyl tape to protect it.
- Protect the removed parts with a shop cloth and prevent them from being dropped.
- Replace a deformed or damaged clip.
- If a part is specified as a non-reusable part, always replace it with a new one.
- Be sure to tighten bolts and nuts securely to the specified torque.
- After installation is complete, be sure to check that each part works properly.
- Follow the steps below to clean components:
 - Water soluble dirt:
 - Dip a soft cloth into lukewarm water, wring the water out of the cloth and wipe the dirty area.
 - Then rub with a soft, dry cloth.
 - Oily dirt:
 - Dip a soft cloth into lukewarm water with mild detergent (concentration: within 2 to 3%) and wipe the dirty area.
 - Then dip a cloth into fresh water, wring the water out of the cloth and wipe the detergent off.
 - Then rub with a soft, dry cloth.
 - Do not use organic solvent such as thinner, benzene, alcohol or gasoline.
 - For genuine leather seats, use a genuine leather seat cleaner.

PREPARATION

< PREPARATION >

PREPARATION

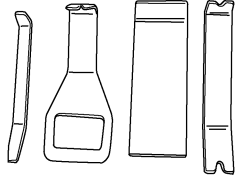
PREPARATION

Special Service Tool

INFOID:000000012590991

The actual shape of the tools may differ from those illustrated here.

Tool number (TechMate No.) Tool name	Description
— (J-46534) Trim Tool Set	Removing trim components



AWJIA0483ZZ

COMPONENT PARTS

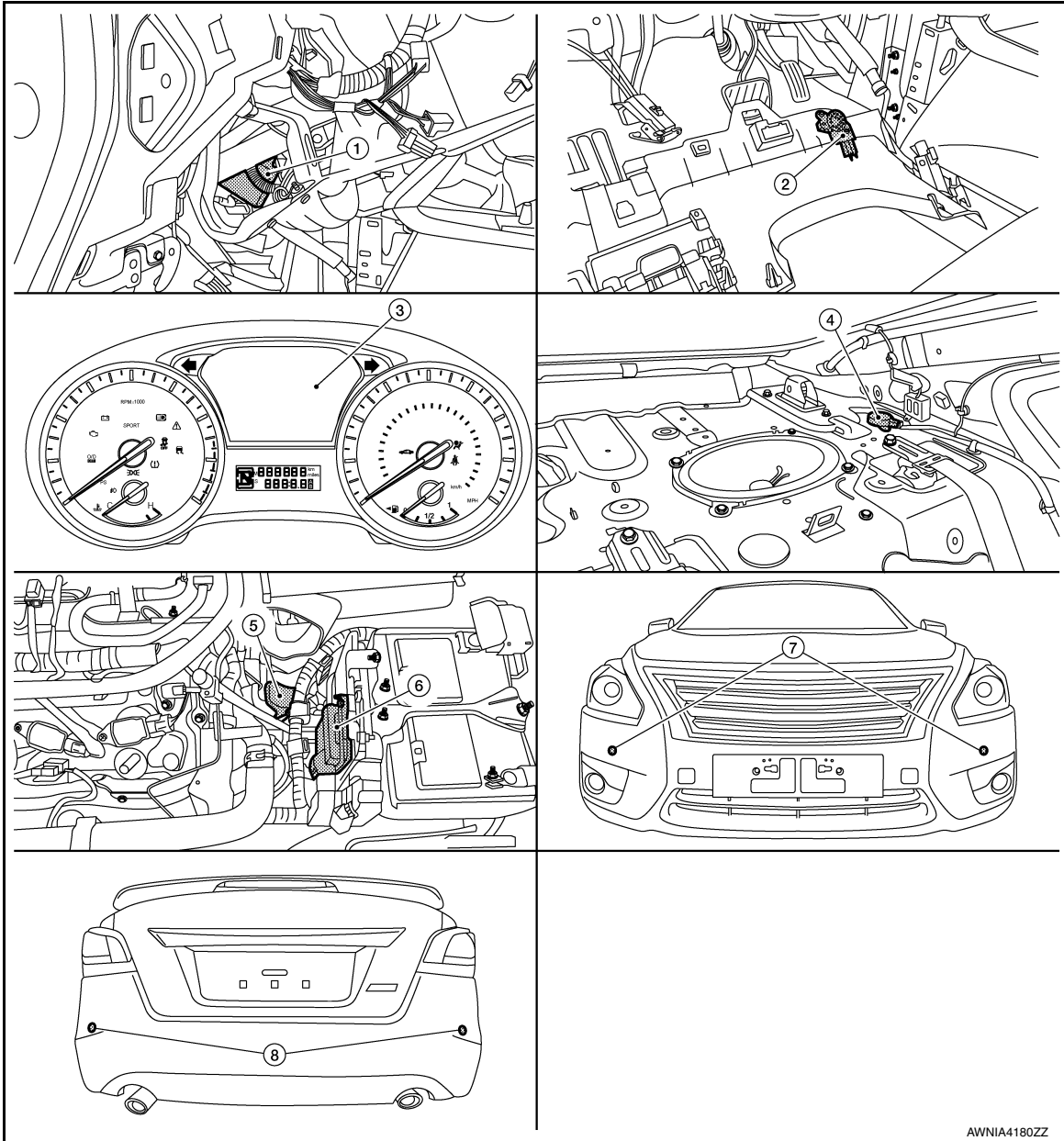
< SYSTEM DESCRIPTION >

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000012590992



1. Sonar control unit (view with instrument lower panel LH removed)
2. Front sonar buzzer (view of back side of instrument lower panel LH)
3. Combination meter
4. Rear sonar buzzer (view with parcel shelf removed)
5. Transmission range switch (view with front air duct removed)
6. TCM (view with front air duct removed)
7. Front sonar sensor LH
Front sonar sensor RH
8. Rear sonar sensor LH
Rear sonar sensor RH

Component Description

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COMPONENT PARTS

< SYSTEM DESCRIPTION >

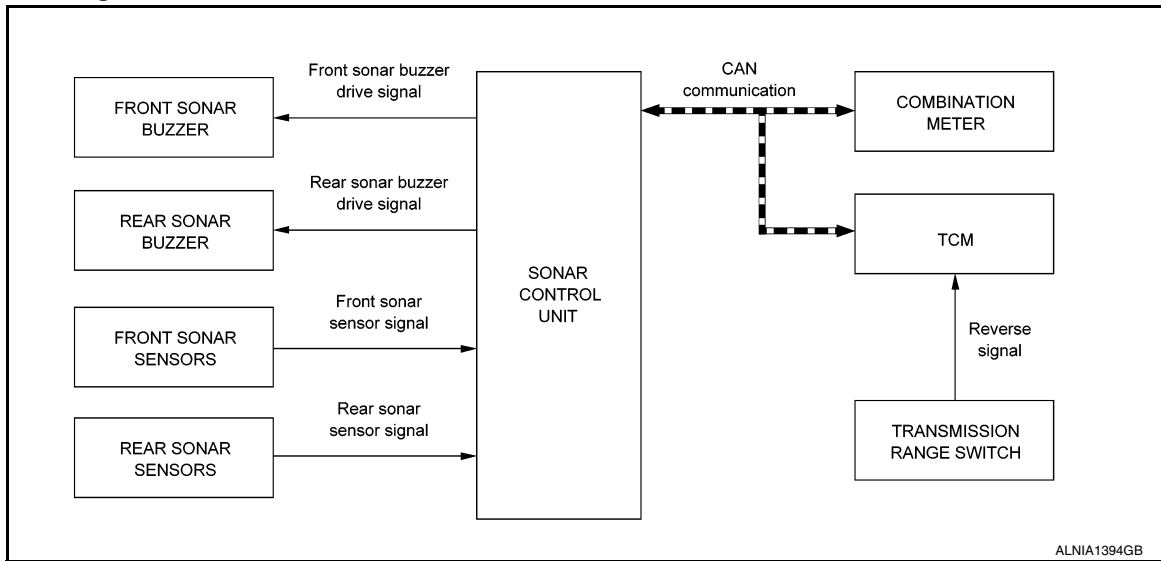
Component	Function
Sonar control unit	Controls sonar system and provides self-diagnosis
Front sonar buzzer	Sounds a signal when objects are detected in front of vehicle
Combination meter	Operates sonar indicator via CAN communication
Rear sonar buzzer	Sounds a signal when objects are detected in rear of vehicle
Transmission range switch	Provides reverse signal for sonar control unit via CAN communication
TCM	
Front sonar sensors	Senses objects in front of vehicle
Rear sonar sensors	Senses objects in rear of vehicle

SYSTEM

< SYSTEM DESCRIPTION >

SYSTEM

System Diagram



System Description

INFOID:000000012590995

SYSTEM OPERATION DESCRIPTION

- Sonar sensors transmit a sensor signal to sonar control unit when detecting an obstacle, sonar control unit converts signal into a detection distance signal and transmits it to combination meter via CAN communication. Combination meter operates sonar display in vehicle information display.
- Sonar control unit is capable of self diagnosis. It can detect sensor malfunction or sensor harness open circuits.

OBSTACLE DETECTION DISTANCE

- Sonar control unit changes output of sonar display and warning buzzers in 3 stages according to obstacle detection distance from corner sensors.
- Sonar control unit changes setting of obstacle detection distance in 4 stages.

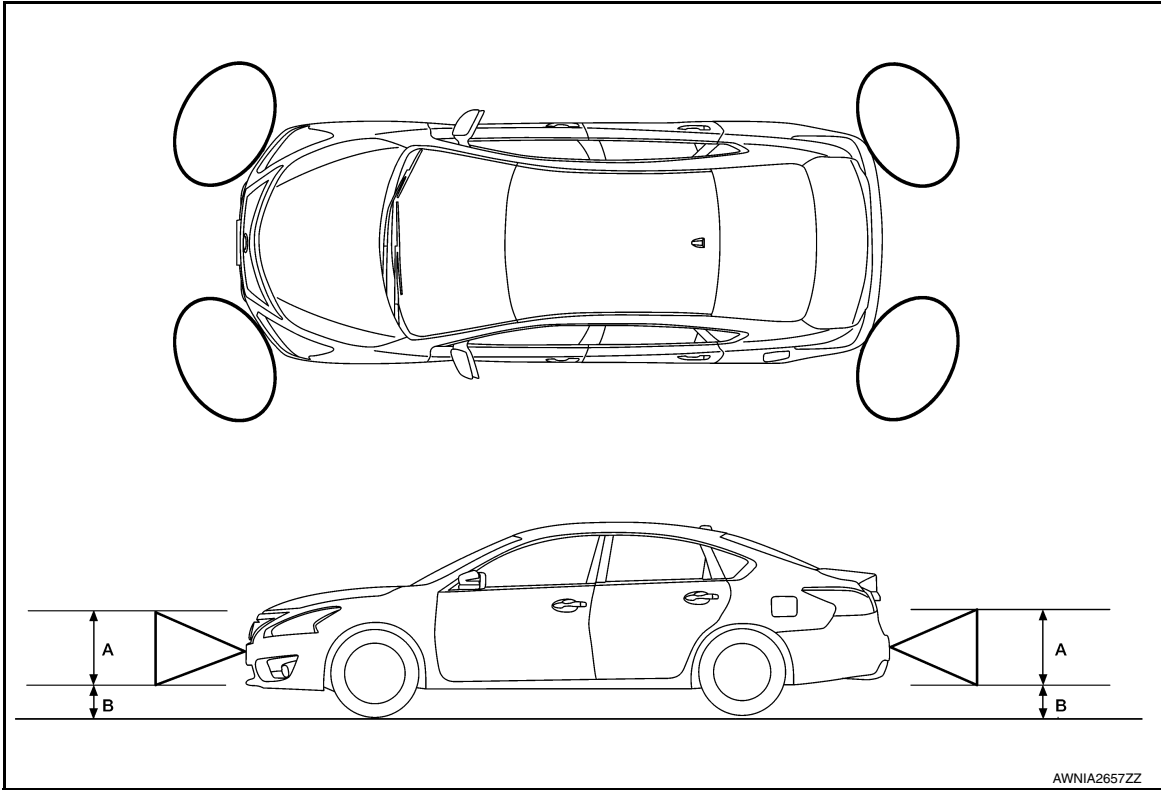
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< SYSTEM DESCRIPTION >

Obstacle detection image



A. Approx. 50 cm (19.6 in)

B. Approx. 15 cm (5.9 in)

Detection distance

Warning item	Sensitivity level 1 (Fastest warning)	Sensitivity level 2 (Faster warning)	Sensitivity level 3 (Default value)	Sensitivity level 4 (Slower warning)
First stage warning	70 – 80 cm (27.5 – 31.4 in)	60 – 70 cm (23.6 – 27.5 in)	50 – 60 cm (19.6 – 23.6 in)	40 – 50 cm (15.7 – 19.6 in)
Second stage warning	50 – 70 cm (19.6 – 27.5 in)	40 – 60 cm (15.7 – 23.6 in)	30 – 50 cm (11.8 – 19.6 in)	30 – 40 cm (11.8 – 15.7 in)
Third stage warning	Less than 50 cm (19.6 in)	Less than 40 cm (15.7 in)	Less than 30 cm (11.8 in)	Less than 30 cm (11.8 in)

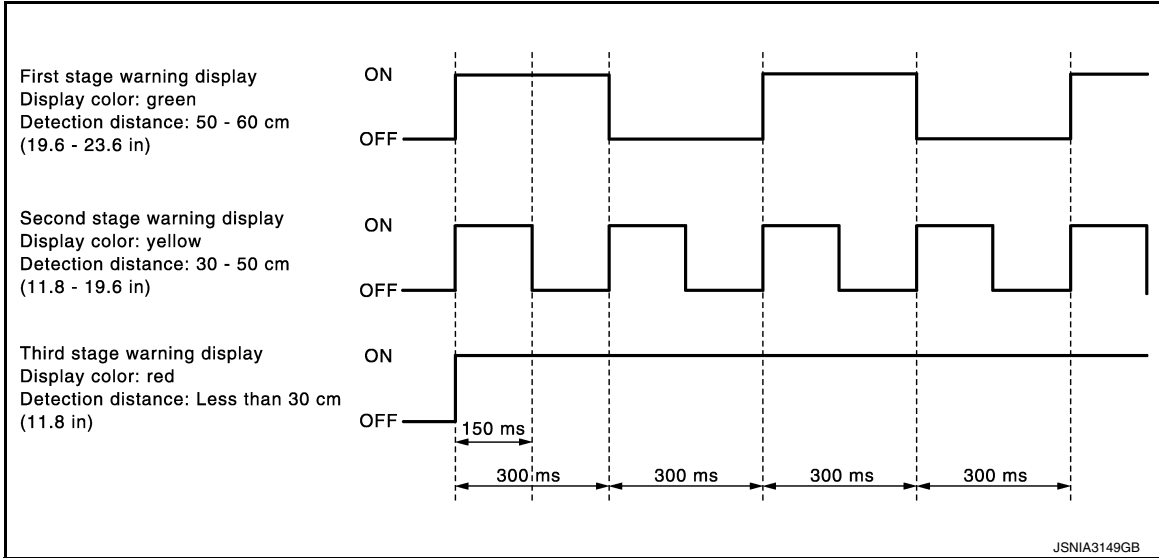
SONAR DISPLAY

- Combination meter receives detection distance signal via CAN communication from sonar control unit.
- Combination meter operates the sonar display in vehicle information display.
- Combination meter changes color and blinking cycle of display according to detection distance.

SYSTEM

< SYSTEM DESCRIPTION >

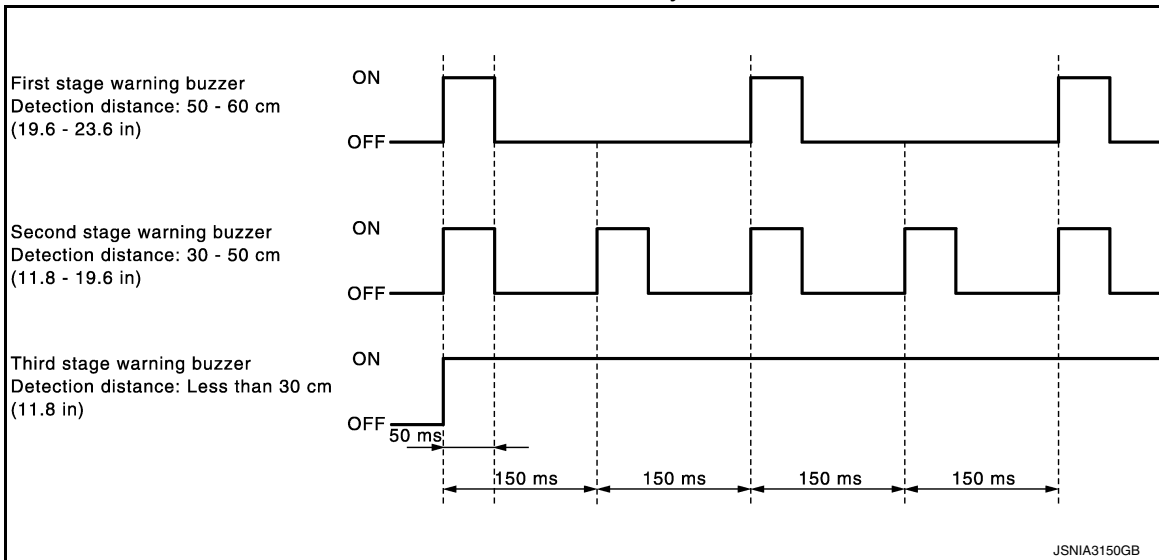
Color and blinking cycle of sonar indicator



SONAR BUZZER OPERATION

- Sonar sensors transmit a sensor signal to sonar control unit when detecting an obstacle.
- Sonar control unit converts signal received from each sensor into distance and transmits detection distance signal to combination meter via CAN communication.
- Sonar control unit transmits a buzzer signal to front and rear sonar buzzers.
- When a front corner sensor detects an obstacle, front sonar buzzer is heard.
- When a rear corner sensor detects an obstacle, rear sonar buzzer is heard.
- Sonar control unit changes buzzer cycle in 3 stages according to detection distance.

Sonar buzzer cycle



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DIAGNOSIS SYSTEM (SONAR CONTROL UNIT)

< SYSTEM DESCRIPTION >

DIAGNOSIS SYSTEM (SONAR CONTROL UNIT)

CONSULT Function

INFOID:000000012590996

CAUTION:

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

APPLICATION ITEMS

CONSULT can display each diagnostic item using the diagnostic test modes shown as follows:

Direct Diagnostic Mode	Description
ECU Identification	The sonar control unit part number is displayed.
Self Diagnostic Result	The sonar control unit self diagnostic results are displayed.
Data Monitor	The sonar control unit input/output data is displayed in real time.
Active Test	The sonar control unit activates outputs to test components.
Work support	The settings for sonar control unit functions can be changed.
Configuration	<ul style="list-style-type: none">The vehicle specification can be read and saved.The vehicle specification can be written when replacing sonar control unit.
CAN Diag Support Mntr	The result of transmit/receive diagnosis of CAN communication is displayed.

ECU IDENTIFICATION

Displays the part number of sonar control unit.

SELF-DIAGNOSTIC RESULTS

For details, refer to [SN-14, "DTC Index"](#).

DATA MONITOR

Monitor Item	Description
VEHICLE SPEED [mph/km/h]	Indicates vehicle speed signal received from combination meter on CAN communication line.
SONAR C/U POWER SUPPLY [V]	Indicates condition of supply voltage signal to sonar control unit.
SENSOR VOLTAGE [V]	Indicates condition of voltage signal to sonar sensors.
DETECTION MODE [Mode 1/Mode 2]	Indicates condition of display detection mode.
SONAR TEMPORARY OFF [Yes/No]	Indicates condition of sonar system.
SONAR PERMANENT OFF [Yes/No]	Indicates condition of sonar system.
P N RANGE [On/Off]	Indicates condition of selector lever P (park) or N (neutral) position.
LED [Yes/No]	Indicates condition of LED indicator.
REVERSE RANGE [On/Off]	Indicates condition of transmission range switch R (reverse) position.

DIAGNOSIS SYSTEM (SONAR CONTROL UNIT)

< SYSTEM DESCRIPTION >

Monitor Item	Description	
SHRT DST FRM RR SENS [cm/in]	Indicates distance to obstacle.	A
SHRT DST FRM FR SENS [cm/in]		
COR[RL] [cm/in]		B
COR[RL]->CEN[RL]/CEN[R] [cm/in]		
CEN[RL]/CEN[R]->COR[RL] [cm/in]		C
CEN[RL]/CEN[R] [cm/in]		
CEN[RL]->CEN[RR] [cm/in]		
CEN[RR]->CEN[RL] [cm/in]		D
CEN[RR] [cm/in]		
CEN[RR]/CEN[R]->COR[RR] [cm/in]		
COR[RR]->CEN[RR]/CEN[R] [cm/in]		E
COR[RR] [cm/in]		
COR[FL] [cm/in]		F
COR[FL]->CEN[FL]/CEN[F] [cm/in]		
CEN[FL]/CEN[F]->COR[FL] [cm/in]		G
CEN[FL]/CEN[F] [cm/in]		
CEN[FL]->CEN[FR] [cm/in]		H
CEN[FR]->CEN[FL] [cm/in]		
CEN[FR] [cm/in]		I
CEN[FR]/CEN[F]->COR[FR] [cm/in]		
COR[FR]->CEN[FR]/CEN[F] [cm/in]	J	
COR[FR] [cm/in]		
RVRB TIME COR[RL] [ms/sec]	K	
RVRB TIME COR[RR] [ms/sec]		
RVRB TIME COR[FL] [ms/sec]		
RVRB TIME COR[FR] [ms/sec]		

ACTIVE TEST

Test Item	Description	
FRONT BUZZER	This test is able to check front buzzer operation [On/Off].	L
REAR BUZZER	This test is able to check rear buzzer operation [On/Off].	M

WORK SUPPORT

Support Item	Setting	Description	
VOLUME SETTING	Vol.1	Allows you to set volume of warning tone.	SN
	Low		
	Vol.3		O
	Middle		
	Vol.5		P
	High		
	Off		

CONFIGURATION

Refer to [SN-24. "CONFIGURATION \(SONAR CONTROL UNIT\) : Description"](#).

CAN DIAG SUPPORT MNTR

Refer to [LAN-16. "CAN Diagnostic Support Monitor"](#).

SONAR CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

ECU DIAGNOSIS INFORMATION

SONAR CONTROL UNIT

Reference Value

INFOID:0000000012590997

VALUES ON THE DIAGNOSIS TOOL

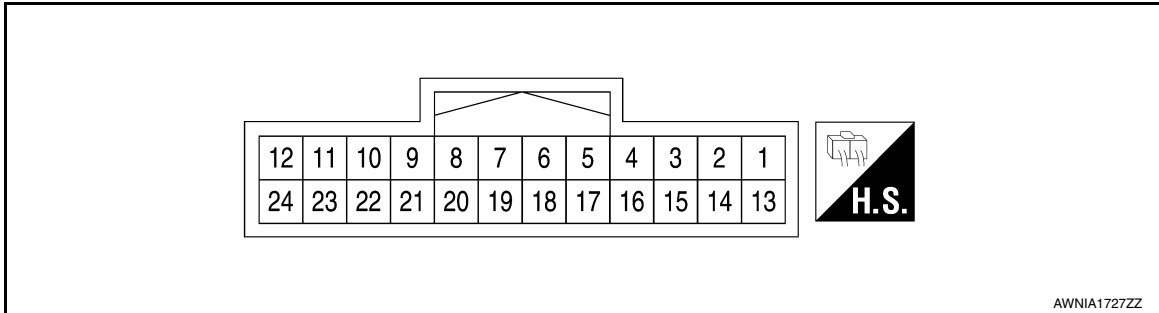
Monitor Item	Condition	Value/Status	
COR[FL]	Key ON, selector lever in R (reverse) position.	cm/in	
COR[FR]			
COR[RL]			
COR[RR]			
COR[RL]->CEN[RL]/CEN[R] [cm/in]			
CEN[RL]/CEN[R]->COR[RL] [cm/in]			
CEN[RL]/CEN[R] [cm/in]			
CEN[RL]->CEN[RR] [cm/in]			
CEN[RR]->CEN[RL] [cm/in]			
CEN[RR] [cm/in]			
CEN[RR]/CEN[R]->COR[RR] [cm/in]			
COR[RR]->CEN[RR]/CEN[R] [cm/in]			
COR[FL]->CEN[FL]/CEN[F] [cm/in]			
CEN[FL]/CEN[F]->COR[FL] [cm/in]			
CEN[FL]/CEN[F] [cm/in]			
CEN[FL]->CEN[FR] [cm/in]			
CEN[FR]->CEN[FL] [cm/in]			
CEN[FR] [cm/in]			
CEN[FR]/CEN[F]->COR[FR] [cm/in]			
COR[FR]->CEN[FR]/CEN[F] [cm/in]			
DETECTION MODE	Key ON.	Mode 1 Mode 2	
P N RANGE	When selector lever is in any position other than P (park) or N (neutral).	Off	
	When selector lever in P (park) or N (neutral) position.	On	
LED	When LED is off.	No	
	When LED is on.	Yes	
REVERSE RANGE	When transmission range switch is in any position other than R (reverse).	Off	
	When transmission range switch is in R (reverse) position.	On	
RVRB TIME COR[FL]	Key ON, selector lever in R (reverse) position.	ms/sec	
RVRB TIME COR[FR]			
RVRB TIME COR[RL]			
RVRB TIME COR[RR]			
SENSOR VOLTAGE			5.0 V
SHRT DST FRM FR SENS			cm/in
SHRT DST FRM RR SENS			
SONAR C/U POWER SUPPLY			Key ON.

SONAR CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

Monitor Item	Condition	Value/Status
SONAR PERMANENT OFF	Key ON, selector lever in R (reverse) position.	No
	When selector lever is in any position other than R (reverse).	Yes
SONAR TEMPORARY OFF	Key ON, selector lever in R (reverse) position.	No
	When selector lever is in any position other than R (reverse).	Yes
VEHICLE SPEED	While driving, equivalent to speedometer reading	mph, km/h

TERMINAL LAYOUT

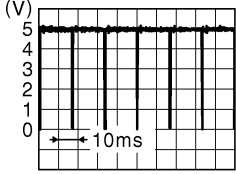


PHYSICAL VALUES

Terminal (Wire color)		Description		Condition		Reference value (Approx.)
+	-	Signal name	Input/Output	Ignition switch	Operation	
3 (BG)	13 (W)	Sensor signal front LH	Input	ON	Shift position is R (reverse). Obstacle within range of front sonar sensor LH.	<p style="text-align: right;">JSNIA0837GB</p>
4 (P)	13 (W)	Sensor signal front RH	Input	ON	Shift position is R (reverse). Obstacle within range of front sonar sensor RH.	<p style="text-align: right;">JSNIA0837GB</p>
5 (L)	—	CAN high	Input/Output	—	—	—
6 (P)	—	CAN low	Input/Output	—	—	—
10 (B)	14 (BG)	Sensor signal rear RH	Input	ON	Shift position is R (reverse). Obstacle within range of rear sonar sensor RH.	<p style="text-align: right;">JSNIA0837GB</p>
12 (G)	Ground	IGN power supply	Input	ON	—	Battery voltage
15 (B)	Ground	Ground	—	ON	—	0 V

SONAR CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

Terminal (Wire color)		Description		Condition		Reference value (Approx.)
+	-	Signal name	Input/ Output	Ignition switch	Operation	
18 (G)	Ground	Front buzzer signal	Output	ON	Shift position is R (reverse). Obstacle within range of a front sonar sensor.	Battery voltage
19 (P)	Ground	Buzzer power supply	Output	ON	—	Battery voltage
20 (R)	Ground	Rear buzzer signal	Output	ON	Shift position is R (reverse). Obstacle within range of a rear sonar sensor.	Battery voltage
22 (R)	14 (BG)	Sensor signal rear LH	Input	ON	Shift position is R (reverse). Obstacle within range of rear sonar sensor LH.	 <p style="text-align: right; font-size: small;">JSNIA0837GB</p>

DTC Index

INFOID:000000012590998

CONSULT Display	Reference Page
U1000: CAN COMM CIRCUIT	SN-26. "DTC Logic"
U1010: CONTROL UNIT (CAN)	SN-27. "DTC Logic"
B2720: REAR LEFT SIDE EXTERNAL SENSOR	SN-28. "DTC Logic"
B2723: REAR RIGHT SIDE EXTERNAL SENSOR	SN-29. "DTC Logic"
B2724: ECU	SN-30. "DTC Logic"
B2725: REAR BUZZER	SN-31. "DTC Logic"
B2729: FRONT LEFT SIDE EXTERNAL SENSOR	SN-33. "DTC Logic"
B272C: FRONT RIGHT SIDE EXTERNAL SENSOR	SN-34. "DTC Logic"
B272D: FRONT BUZZER	SN-35. "DTC Logic"

SONAR SYSTEM

< WIRING DIAGRAM >

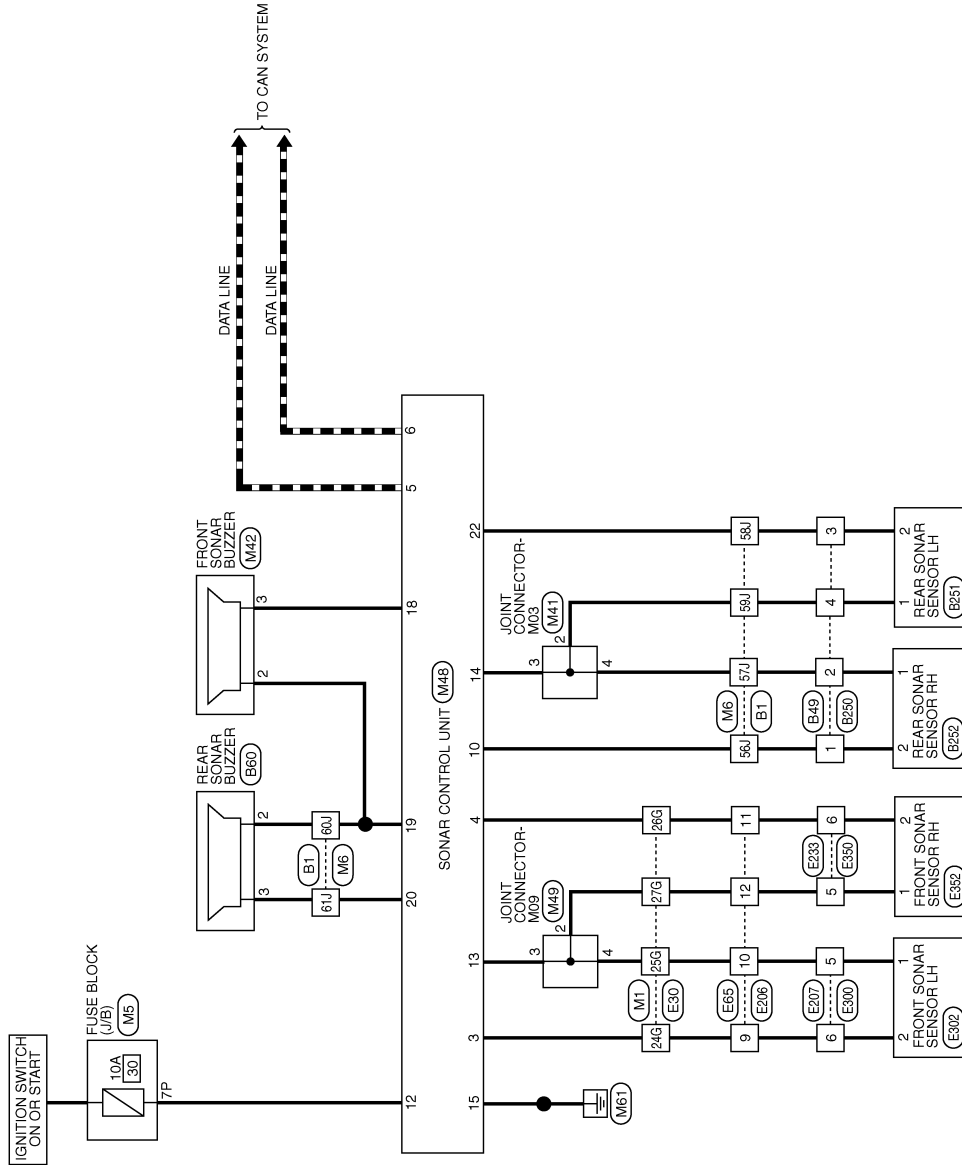
WIRING DIAGRAM

SONAR SYSTEM

Wiring Diagram

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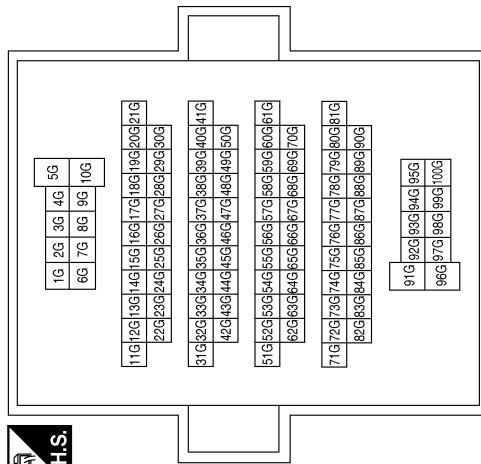
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SONAR SYSTEM CONNECTORS

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



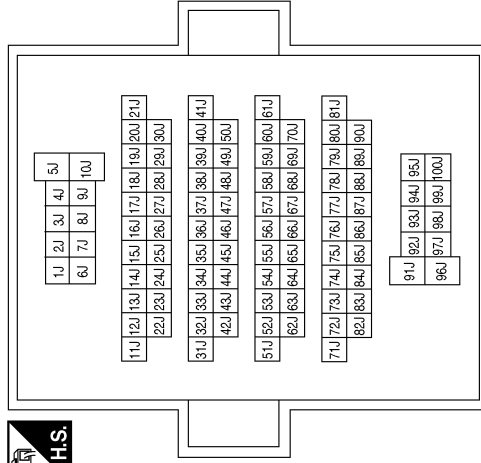
Terminal No.	Color of Wire	Signal Name
24G	BG	-
25G	W	-
26G	P	-
27G	W	-

Connector No.	M5
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
7P	G	-

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



Terminal No.	Color of Wire	Signal Name
56J	B	-
57J	W	-
58J	R	-
59J	W	-
60J	P	-
61J	R	-

SONAR SYSTEM

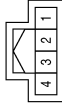
< WIRING DIAGRAM >

Connector No.	M41
Connector Name	JOINT CONNECTOR-M03
Connector Color	WHITE



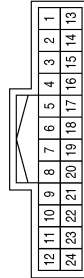
Terminal No.	Color of Wire	Signal Name
2	W	-
3	BG	-
4	W	-

Connector No.	M42
Connector Name	FRONT SONAR BUZZER
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
2	W	-
3	G	-

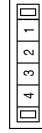
Connector No.	M48
Connector Name	SONAR CONTROL UNIT
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	-	-
2	-	-
3	BG	FOL
4	P	FOR
5	L	CAN-H
6	P	CAN-L
7	-	-
8	-	-

Terminal No.	Color of Wire	Signal Name
9	-	-
10	B	ROR
11	-	-
12	G	IGN
13	W	GND
14	BG	GND
15	B	GND
16	-	-
17	-	-
18	G	FR SOUND (-)
19	P	SOUND (+)
20	R	RR SOUND (-)
21	-	-
22	R	ROL
23	-	-
24	-	-

Connector No.	M49
Connector Name	JOINT CONNECTOR-M09
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
2	W	-
3	W	-
4	W	-

ABNIA8195GB

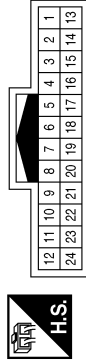
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SONAR SYSTEM

< WIRING DIAGRAM >

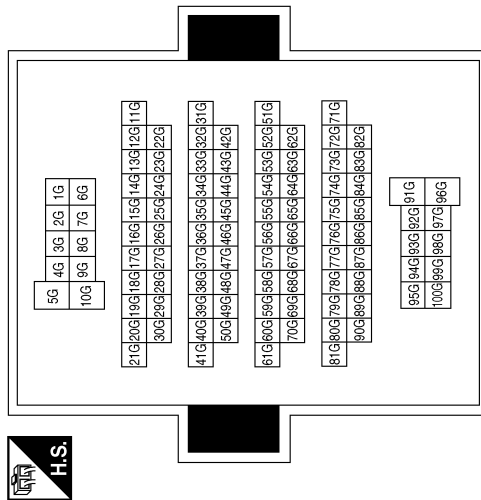
Connector No.	E65
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
9	R	-
10	W	-
11	BG	-
12	G	-

Terminal No.	Color of Wire	Signal Name
24G	R	-
25G	W	-
26G	BG	-
27G	G	-

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



Connector No.	E233
Connector Name	WIRE TO WIRE
Connector Color	BLACK



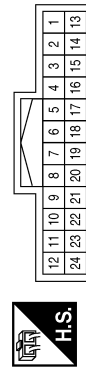
Terminal No.	Color of Wire	Signal Name
5	G	-
6	P	-

Connector No.	E207
Connector Name	WIRE TO WIRE
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
5	W	-
6	R	-

Connector No.	E206
Connector Name	WIRE TO WIRE
Connector Color	WHITE



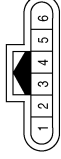
Terminal No.	Color of Wire	Signal Name
9	R	-
10	W	-
11	P	-
12	G	-

ABNIA8196GB

SONAR SYSTEM

< WIRING DIAGRAM >

Connector No.	E350
Connector Name	WIRE TO WIRE
Connector Color	BLACK



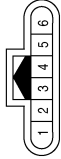
Terminal No.	Color of Wire	Signal Name
5	G	-
6	P	-

Connector No.	E302
Connector Name	FRONT SONAR SENSOR LH
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	G	-
2	P	-

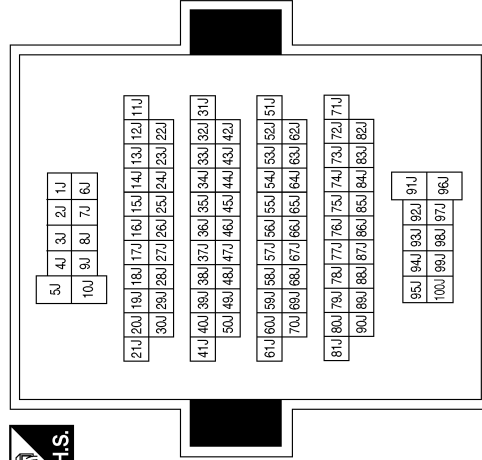
Connector No.	E300
Connector Name	WIRE TO WIRE
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
5	G	-
6	P	-

Terminal No.	Color of Wire	Signal Name
56J	BG	-
57J	R	-
58J	W	-
59J	G	-
60J	BG	-
61J	R	-

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



Connector No.	E352
Connector Name	FRONT SONAR SENSOR RH
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	G	-
2	P	-

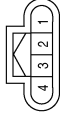
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SONAR SYSTEM

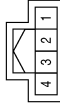
< WIRING DIAGRAM >

Connector No.	B250
Connector Name	WIRE TO WIRE
Connector Color	BLACK



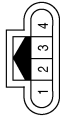
Terminal No.	Color of Wire	Signal Name
1	P	-
2	L	-
3	B	-
4	Y	-

Connector No.	B60
Connector Name	REAR SONAR BUZZER
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
2	BG	-
3	R	-

Connector No.	B49
Connector Name	WIRE TO WIRE
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	BG	-
2	R	-
3	W	-
4	G	-

Connector No.	B252
Connector Name	REAR SONAR SENSOR RH
Connector Color	BLACK



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

Connector No.	B251
Connector Name	REAR SONAR SENSOR LH
Connector Color	BLACK



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

ABNIA8198GB

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

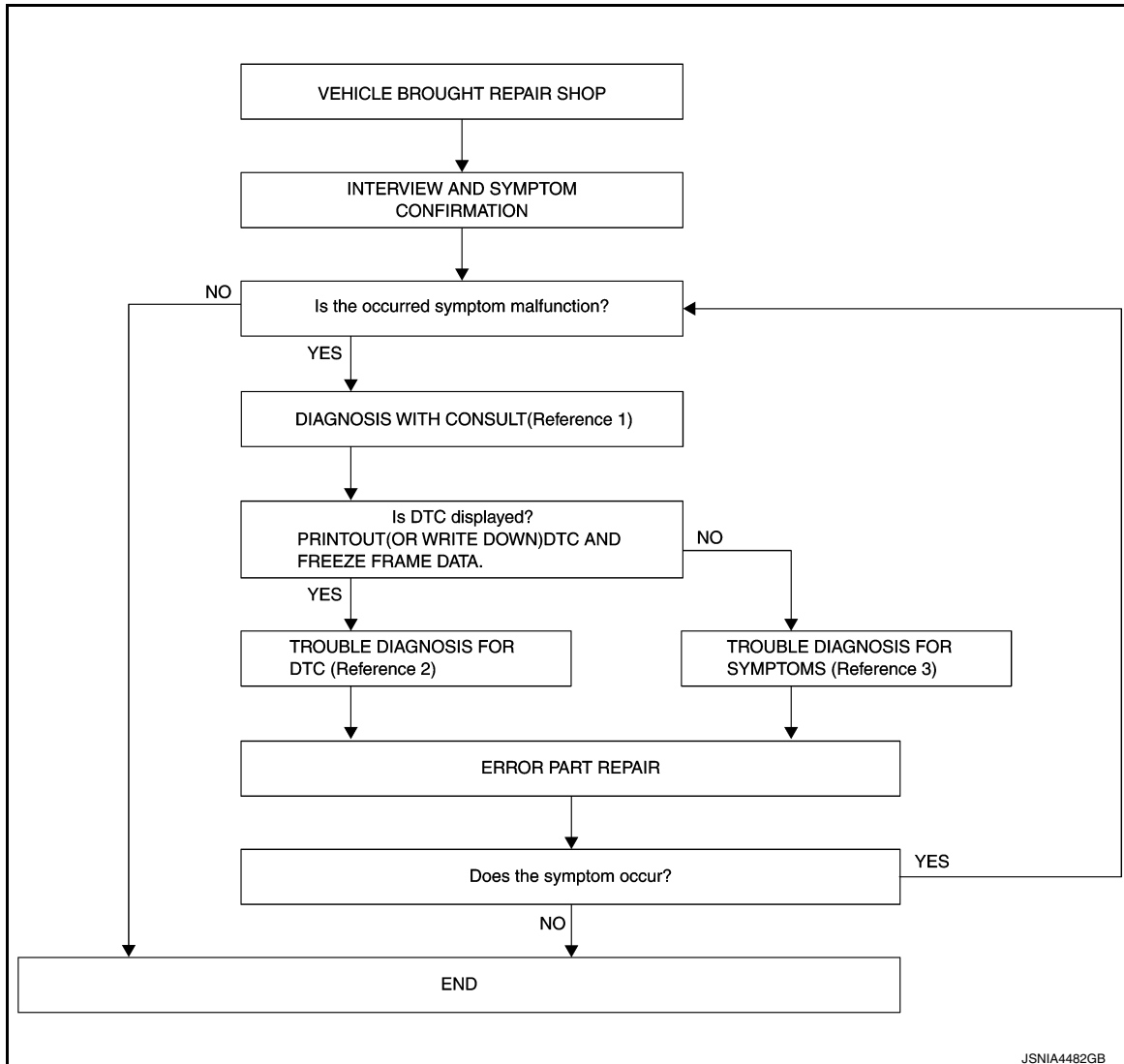
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:0000000012591000

OVERALL SEQUENCE



Reference 1: Refer to [SN-10, "CONSULT Function"](#).

Reference 2: Refer to [SN-14, "DTC Index"](#).

Reference 3: Refer to [SN-38, "Symptom Table"](#).

DETAILED FLOW

1. INTERVIEW AND SYMPTOM CONFIRMATION

Check the malfunction symptoms by performing the following items.

- Interview the customer to obtain the malfunction information (conditions and environment when the malfunction occurred).
- Check the symptom.

Is the occurred symptom malfunction?

YES >> GO TO 2.

NO >> Inspection End.

2. DIAGNOSIS WITH CONSULT

1. Connect CONSULT and perform Self Diagnostic Result for SONAR. Refer to [SN-10, "CONSULT Function"](#).

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DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

NOTE:

Skip to step 4 of the diagnosis procedure if SONAR is not displayed.

2. When DTC is detected, follow the instructions below:

- Record DTC and Freeze Frame Data.

Is DTC displayed?

YES >> GO TO 3.

NO >> GO TO 4.

3. TROUBLE DIAGNOSIS FOR DTC

1. Check the DTC indicated in the self-diagnosis results.
2. Perform the relevant diagnosis referring to the DTC Index. Refer to [SN-14. "DTC Index"](#).

>> GO TO 5.

4. TROUBLE DIAGNOSIS FOR SYMPTOMS

Perform the relevant diagnosis referring to the diagnosis chart by symptom. Refer to [SN-38. "Symptom Table"](#).

>> GO TO 5.

5. ERROR PART REPAIR

1. Repair or replace the identified malfunctioning parts.
2. Perform Self Diagnostic Result for SONAR with CONSULT.

NOTE:

Erase the stored self-diagnosis results after repairing or replacing the relevant components if any DTC has been indicated in the self-diagnosis results.

3. Check that the symptom does not occur.

Does the symptom occur?

YES >> GO TO 1.

NO >> Inspection End.

INSPECTION AND ADJUSTMENT

< BASIC INSPECTION >

INSPECTION AND ADJUSTMENT

ADDITIONAL SERVICE WHEN REPLACING SONAR CONTROL UNIT

ADDITIONAL SERVICE WHEN REPLACING SONAR CONTROL UNIT : Description

INFOID:000000012591001

BEFORE REPLACEMENT

When replacing sonar control unit, save or print current vehicle specification with CONSULT configuration before replacement.

NOTE:

If "Before Replace ECU" cannot be used, use the "After Replace ECU" or "Manual Configuration" after replacing sonar control unit.

AFTER REPLACEMENT

CAUTION:

When replacing sonar control unit, you must perform "After Replace ECU" with CONSULT.

- Complete the procedure of "After Replace ECU" in order.
- If you set incorrect "After Replace ECU", incidents might occur.
- Configuration is different for each vehicle model. Confirm configuration of each vehicle model.

ADDITIONAL SERVICE WHEN REPLACING SONAR CONTROL UNIT : Work Procedure

INFOID:000000012591002

1. SAVING VEHICLE SPECIFICATION

CONSULT

Enter "Re/Programming, Configuration" and perform "Before Replace ECU" to save or print current vehicle specification.

NOTE:

If "Before Replace ECU" cannot be used, use the "After Replace ECU" or "Manual Configuration" after replacing sonar control unit.

>> GO TO 2.

2. REPLACE SONAR CONTROL UNIT

Replace sonar control unit. Refer to [SN-40. "Removal and Installation"](#).

>> GO TO 3.

3. WRITING VEHICLE SPECIFICATION

CONSULT

1. Enter "Re/Programming, Configuration".
2. If "Before Replace ECU" operation was performed, an "Operation Log Selection" screen will automatically be displayed. Select the applicable file from the "Saved Data List" and press "Confirm" to write vehicle specification. Refer to [SN-24. "CONFIGURATION \(SONAR CONTROL UNIT\) : Work Procedure"](#).
3. If "Before Replace ECU" operation was not performed, select "After Replace ECU" or "Manual Configuration" to write vehicle specification. Refer to [SN-24. "CONFIGURATION \(SONAR CONTROL UNIT\) : Work Procedure"](#).

>> GO TO 4.

4. OPERATION CHECK

Check that the operation of the sonar control unit is normal.

>> Work End.

CONFIGURATION (SONAR CONTROL UNIT)

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INSPECTION AND ADJUSTMENT

< BASIC INSPECTION >

CONFIGURATION (SONAR CONTROL UNIT) : Description

INFOID:000000012591003

Vehicle specification needs to be written with CONSULT. Configuration has three functions as follows:

Function	Description
"Before Replace ECU"	<ul style="list-style-type: none">• Reads the vehicle configuration of current sonar control unit.• Saves the read vehicle configuration.
"After Replace ECU"	Writes the vehicle configuration with manual selection.
"Select Saved Data List"	Writes the vehicle configuration with saved data.

CAUTION:

- When replacing sonar control unit, you must perform "Select Saved Data List" or "After Replace ECU" with CONSULT.
- Complete the procedure of "Select Saved Data List" or "After Replace ECU" in order.
- If you set incorrect "Select Saved Data List" or "After Replace ECU", incidents might occur.
- Configuration is different for each vehicle model. Confirm configuration of each vehicle model.
- Never perform "Select Saved Data List" or "After Replace ECU" except for new sonar control unit.

CONFIGURATION (SONAR CONTROL UNIT) : Work Procedure

INFOID:000000012591004

1. WRITING MODE SELECTION

CONSULT

Select "Reprogramming, Configuration" of sonar control unit.

When writing saved data>>GO TO 2.

When writing manually>>GO TO 3.

2. PERFORM "SAVED DATA LIST"

CONSULT

Automatically "Operation Log Selection" window will display if "Before Replace ECU" was performed. Select applicable file from the "Save Data List" and press "Confirm".

>> Work End.

3. PERFORM "AFTER REPLACE ECU" OR "MANUAL CONFIGURATION"

CONSULT

1. Select "After Replace ECU" or "Manual Configuration".
2. Identify the correct model and configuration list. Refer to [SN-25. "CONFIGURATION \(SONAR CONTROL UNIT\) : Configuration List"](#).

3. Confirm and/or change setting value for each item.

CAUTION:

Thoroughly read and understand the vehicle specification. ECU control may not operate normally if the setting is not correct.

4. Select "Next".

CAUTION:

Make sure to select "Next", confirm each setting value and press "OK" even if the indicated configuration of brand new sonar control unit is same as the desirable configuration. If not, configuration which is set automatically by selecting vehicle model can not be memorized.

5. When "Completed", select "End".

>> GO TO 4.

4. OPERATION CHECK

Confirm that each function controlled by sonar control unit operates normally.

>> Work End.

INSPECTION AND ADJUSTMENT

< BASIC INSPECTION >

CONFIGURATION (SONAR CONTROL UNIT) : Configuration List

INFOID:000000012591005

CAUTION:

Thoroughly read and understand the vehicle specification. Incorrect settings may result in abnormal control of ECU.

MANUAL SETTING ITEM	
Items	Setting value
BCI FUNCTION	WITH ⇔ WITHOUT*

⇔: Items which confirm vehicle specifications

*: BCI FUNCTION should always be set to WITHOUT.

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U1000 CAN COMM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

DTC Logic

INFOID:0000000012591006

DTC DETECTION LOGIC

CONSULT Display	DTC Detection Condition	Possible Cause
CAN COMM CIRCUIT [U1000]	Sonar control unit is not transmitting or receiving CAN communication signal for 2 seconds or more.	CAN communication system.

Diagnosis Procedure

INFOID:0000000012591007

1. PERFORM SELF DIAGNOSTIC RESULT

1. Turn ignition switch ON and wait for 2 seconds or more.
2. Perform "Self Diagnostic Result" for "SONAR".

Is CAN COMM CIRCUIT displayed?

- YES >> Refer to [LAN-19, "Trouble Diagnosis Flow Chart"](#).
NO >> Refer to [GI-44, "Intermittent Incident"](#).

U1010 CONTROL UNIT (CAN)

< DTC/CIRCUIT DIAGNOSIS >

U1010 CONTROL UNIT (CAN)

DTC Logic

INFOID:000000012591008

DTC DETECTION LOGIC

CONSULT Display	DTC Detection Condition	Possible Cause
CONTROL UNIT (CAN) [U1010]	CAN initial diagnosis malfunction is detected.	Replace the sonar control unit if the malfunction occurs constantly. Refer to SN-40, "Removal and Installation" .

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B2720 CORNER SENSOR [RL]

< DTC/CIRCUIT DIAGNOSIS >

B2720 CORNER SENSOR [RL]

DTC Logic

INFOID:0000000012591009

DTC DETECTION LOGIC

CONSULT Display	DTC Detection Condition	Possible Cause
REAR LEFT SIDE EXTERNAL SENSOR [B2720]	<ul style="list-style-type: none">• Sensor is not configured.• Sensor is open or short circuited.• Sensor element malfunction.	<ul style="list-style-type: none">• Sensor configuration.• Harness or connectors.• Rear sonar sensor LH.

Diagnosis Procedure

INFOID:0000000012591010

Regarding Wiring Diagram information, refer to [SN-15, "Wiring Diagram"](#).

1. CHECK REAR SONAR SENSOR LH CIRCUIT CONTINUITY

1. Turn ignition switch OFF.
2. Disconnect sonar control unit connector and rear sonar sensor LH connector.
3. Check continuity between sonar control unit connector M48 and rear sonar sensor LH connector B251.

Sonar control unit		Rear sonar sensor LH		Continuity
Connector	Terminal	Connector	Terminal	
M48	22	B251	2	Yes
	14		1	

4. Check continuity between sonar control unit connector M48 and ground.

Sonar control unit		Ground	Continuity
Connector	Terminal		
M48	22	—	No

Is the inspection result normal?

- YES >> GO TO 2.
NO >> Repair or replace harness or connectors.

2. CHECK REAR SONAR SENSOR LH SIGNAL CIRCUIT SHORT TO BATTERY

1. Turn ignition switch ON.
2. Check voltage between sonar control unit connector M48 and ground.

Sonar control unit		Ground	Voltage (Approx.)
Connector	Terminal		
M48	22	—	0V

Is the inspection result normal?

- YES >> Replace rear sonar sensor LH. Refer to [SN-39, "Removal and Installation - Rear Sonar Sensors"](#).
NO >> Repair or replace harness or connectors.

B2723 CORNER SENSOR [RR]

< DTC/CIRCUIT DIAGNOSIS >

B2723 CORNER SENSOR [RR]

DTC Logic

INFOID:0000000012591011

DTC DETECTION LOGIC

CONSULT Display	DTC Detection Condition	Possible Cause
REAR RIGHT SIDE EXTERNAL SENSOR [B2723]	<ul style="list-style-type: none">• Sensor is not configured.• Sensor is open or short circuited.• Sensor element malfunction.	<ul style="list-style-type: none">• Sensor configuration.• Harness or connectors.• Rear sonar sensor RH.

Diagnosis Procedure

INFOID:0000000012591012

Regarding Wiring Diagram information, refer to [SN-15. "Wiring Diagram"](#).

1. CHECK REAR SONAR SENSOR RH SIGNAL CIRCUIT CONTINUITY

1. Turn ignition switch OFF.
2. Disconnect sonar control unit connector and rear sonar sensor RH connector.
3. Check continuity between sonar control unit connector M48 and rear sonar sensor RH connector B252.

Sonar control unit		Rear sonar sensor RH		Continuity
Connector	Terminal	Connector	Terminal	
M48	10	B252	2	Yes
	14		1	

4. Check continuity between sonar control unit connector M48 and ground.

Sonar control unit		Ground	Continuity
Connector	Terminal		
M48	10	—	No

Is the inspection result normal?

- YES >> GO TO 2.
NO >> Repair or replace harness or connectors.

2. CHECK REAR SONAR SENSOR RH SIGNAL CIRCUIT SHORT TO BATTERY

1. Turn ignition switch ON.
2. Check voltage between sonar control unit connector M48 and ground.

Sonar control unit		Ground	Voltage (Approx.)
Connector	Terminal		
M48	10	—	0V

Is the inspection result normal?

- YES >> Replace rear sonar sensor RH. Refer to [SN-39. "Removal and Installation - Rear Sonar Sensors"](#).
NO >> Repair or replace harness or connectors.

B2724 SONAR CONTROL UNIT

< DTC/CIRCUIT DIAGNOSIS >

B2724 SONAR CONTROL UNIT

DTC Logic

INFOID:0000000012591013

DTC DETECTION LOGIC

CONSULT Display	DTC Detection Condition	Possible Cause
ECU [B2724]	Sonar control unit malfunction.	Replace sonar control unit. Refer to SN-40 , " Re- moval and Installation ".

B2725 REAR BUZZER

< DTC/CIRCUIT DIAGNOSIS >

B2725 REAR BUZZER

DTC Logic

INFOID:0000000012591014

DTC DETECTION LOGIC

CONSULT Display	DTC Detection Condition	Possible Cause
REAR BUZZER [B2725]	<ul style="list-style-type: none">• Rear buzzer is open or short circuited.• Rear buzzer malfunction.	<ul style="list-style-type: none">• Harness or connectors.• Rear buzzer.

Diagnosis Procedure

INFOID:0000000012591015

Regarding Wiring Diagram information, refer to [SN-15. "Wiring Diagram"](#).

1. CHECK REAR SONAR BUZZER SIGNAL CIRCUIT CONTINUITY

1. Turn ignition switch OFF.
2. Disconnect sonar control unit connector and rear sonar buzzer connector.
3. Check continuity between sonar control unit connector M48 and rear sonar buzzer connector B60.

Sonar control unit		Rear sonar buzzer		Continuity
Connector	Terminal	Connector	Terminal	
M48	20	B60	3	Yes

4. Check continuity between sonar control unit connector M48 and ground.

Sonar control unit		Ground	Continuity
Connector	Terminal		
M48	20	—	No

Is the inspection result normal?

- YES >> GO TO 2.
NO >> Repair or replace harness or connectors.

2. CHECK REAR SONAR BUZZER SIGNAL CIRCUIT SHORT TO BATTERY

1. Turn ignition switch ON.
2. Check voltage between sonar control unit connector M48 and ground.

Sonar control unit		Ground	Voltage (Approx.)
Connector	Terminal		
M48	20	—	0V

Is the inspection result normal?

- YES >> GO TO 3.
NO >> Repair or replace harness or connectors.

3. CHECK REAR SONAR BUZZER SIGNAL CIRCUIT SHORT TO BUZZER POWER

1. Turn ignition switch OFF.
2. Check continuity between sonar control unit connector M48 terminals.

Sonar control unit connector M48		Continuity
Terminal	Terminal	
19	20	No

Is the inspection result normal?

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B2725 REAR BUZZER

< DTC/CIRCUIT DIAGNOSIS >

- YES >> Replace rear sonar buzzer. Refer to [SN-41, "Removal and Installation - Rear"](#).
- NO >> Repair or replace harness or connectors.

B2729 CORNER SENSOR [FL]

< DTC/CIRCUIT DIAGNOSIS >

B2729 CORNER SENSOR [FL]

DTC Logic

INFOID:000000012591016

DTC DETECTION LOGIC

CONSULT Display	DTC Detection Condition	Possible Cause
FRONT LEFT SIDE EXTERNAL SENSOR [B2729]	<ul style="list-style-type: none"> • Sensor is not configured. • Sensor is open or short circuited. • Sensor element malfunction. 	<ul style="list-style-type: none"> • Sensor configuration. • Harness or connectors. • Front sonar sensor LH.

Diagnosis Procedure

INFOID:000000012591017

Regarding Wiring Diagram information, refer to [SN-15. "Wiring Diagram"](#).

1. CHECK FRONT SONAR SENSOR LH CIRCUIT CONTINUITY

1. Turn ignition switch OFF.
2. Disconnect sonar control unit connector and front sonar sensor LH connector.
3. Check continuity between sonar control unit connector M48 and front sonar sensor LH connector E302.

Sonar control unit		Front sonar sensor LH		Continuity
Connector	Terminal	Connector	Terminal	
M48	3	E302	2	Yes
	13		1	

4. Check continuity between sonar control unit connector M48 and ground.

Sonar control unit		Ground	Continuity
Connector	Terminal		
M48	3	—	No

Is the inspection result normal?

- YES >> GO TO 2.
 NO >> Repair or replace harness or connectors.

2. CHECK FRONT SONAR SENSOR LH SIGNAL CIRCUIT SHORT TO BATTERY

1. Turn ignition switch ON.
2. Check voltage between sonar control unit connector M48 and ground.

Sonar control unit		Ground	Voltage (Approx.)
Connector	Terminal		
M48	3	—	0V

Is the inspection result normal?

- YES >> Replace front sonar sensor LH. Refer to [SN-39. "Removal and Installation - Front Sonar Sensors"](#).
 NO >> Repair or replace harness or connectors.

B272C CORNER SENSOR [FR]

< DTC/CIRCUIT DIAGNOSIS >

B272C CORNER SENSOR [FR]

DTC Logic

INFOID:000000012591018

DTC DETECTION LOGIC

CONSULT Display	DTC Detection Condition	Possible Cause
FRONT RIGHT SIDE EXTERNAL SENSOR [B272C]	<ul style="list-style-type: none"> • Sensor is not configured. • Sensor is open or short circuited. • Sensor element malfunction. 	<ul style="list-style-type: none"> • Sensor configuration. • Harness or connectors. • Front sonar sensor RH.

Diagnosis Procedure

INFOID:000000012591019

Regarding Wiring Diagram information, refer to [SN-15, "Wiring Diagram"](#).

1. CHECK FRONT SONAR SENSOR RH CIRCUIT CONTINUITY

1. Turn ignition switch OFF.
2. Disconnect sonar control unit connector and front sonar sensor RH connector.
3. Check continuity between sonar control unit connector M48 and front sonar sensor RH connector E352.

Sonar control unit		Front sonar sensor RH		Continuity
Connector	Terminal	Connector	Terminal	
M48	4	E352	2	Yes
	13		1	

4. Check continuity between sonar control unit connector M48 and ground.

Sonar control unit		Ground	Continuity
Connector	Terminal		
M48	4	—	No

Is the inspection result normal?

- YES >> GO TO 2.
 NO >> Repair or replace harness or connectors.

2. CHECK FRONT SONAR SENSOR RH SIGNAL CIRCUIT SHORT TO BATTERY

1. Turn ignition switch ON.
2. Check voltage between sonar control unit connector M48 and ground.

Sonar control unit		Ground	Voltage (Approx.)
Connector	Terminal		
M48	4	—	0V

Is the inspection result normal?

- YES >> Replace front sonar sensor RH. Refer to [SN-39, "Removal and Installation - Front Sonar Sensors"](#).
 NO >> Repair or replace harness or connectors.

B272D FRONT BUZZER

< DTC/CIRCUIT DIAGNOSIS >

B272D FRONT BUZZER

DTC Logic

INFOID:000000012591020

DTC DETECTION LOGIC

CONSULT Display	DTC Detection Condition	Possible Cause
FRONT BUZZER [B272D]	<ul style="list-style-type: none">• Front buzzer is open or short circuited.• Front buzzer malfunction.	<ul style="list-style-type: none">• Harness or connectors.• Front buzzer.

Diagnosis Procedure

INFOID:000000012591021

Regarding Wiring Diagram information, refer to [SN-15. "Wiring Diagram"](#).

1. CHECK FRONT SONAR BUZZER SIGNAL CIRCUIT CONTINUITY

1. Turn ignition switch OFF.
2. Disconnect sonar control unit connector and front sonar buzzer connector.
3. Check continuity between sonar control unit connector M48 and front sonar buzzer connector M42.

Sonar control unit		Front sonar buzzer		Continuity
Connector	Terminal	Connector	Terminal	
M48	18	M42	3	Yes

4. Check continuity between sonar control unit connector M48 and ground.

Sonar control unit		Ground	Continuity
Connector	Terminal		
M48	18	—	No

Is the inspection result normal?

- YES >> GO TO 2.
NO >> Repair or replace harness or connectors.

2. CHECK FRONT SONAR BUZZER SIGNAL CIRCUIT SHORT TO BATTERY

1. Turn ignition switch ON.
2. Check voltage between sonar control unit connector M48 and ground.

Sonar control unit		Ground	Voltage (Approx.)
Connector	Terminal		
M48	18	—	0V

Is the inspection result normal?

- YES >> GO TO 3.
NO >> Repair or replace harness or connectors.

3. CHECK FRONT SONAR BUZZER SIGNAL CIRCUIT SHORT TO BUZZER POWER

1. Turn ignition switch OFF.
2. Check continuity between sonar control unit connector M48 terminals.

Sonar control unit connector M48		Continuity
Terminal	Terminal	
19	18	No

Is the inspection result normal?

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B272D FRONT BUZZER

< DTC/CIRCUIT DIAGNOSIS >

- YES >> Replace front sonar buzzer. Refer to [SN-41, "Removal and Installation - Front"](#).
- NO >> Repair or replace harness or connectors.

POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:000000012591022

Regarding Wiring Diagram information, refer to [SN-15. "Wiring Diagram"](#).

1. CHECK FUSE

Check that the following fuse is not blown.

Terminal No.	Signal name	Fuse No.
12	IGN power supply	30 (10A)

Is the fuse blown?

YES >> Replace the blown fuse after repairing the affected circuit.

NO >> GO TO 2.

2. CHECK POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect sonar control unit connector M48.
3. Turn ignition switch ON.
4. Check voltage between sonar control unit connector M48 and ground.

Sonar control unit		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
M48	12	—	Ignition switch: ON	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace harness or connectors.

3. CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between sonar control unit connector M48 and ground.

Sonar control unit		Ground	Continuity
Connector	Terminal		
M48	15	—	Yes

Is the inspection result normal?

YES >> Inspection End.

NO >> Repair or replace harness or connectors.

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SONAR SYSTEM

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

SONAR SYSTEM

Symptom Table

INFOID:0000000012591023

Symptom	Possible cause	Reference page
Malfunction is detected in only 1 sensor of display (Always displayed in red).	<ul style="list-style-type: none">• Sonar sensor circuit• Sonar sensor	<ul style="list-style-type: none">• SN-33 (front LH)• SN-34 (front RH)• SN-28 (rear LH)• SN-29 (rear RH)• SN-39
Malfunction is detected in all 4 sensors of display (Always displayed in red).	<ul style="list-style-type: none">• Sonar control unit power supply and ground circuits• CAN communication circuits	<ul style="list-style-type: none">• SN-37• LAN-19

SONAR SENSOR

< REMOVAL AND INSTALLATION >

REMOVAL AND INSTALLATION

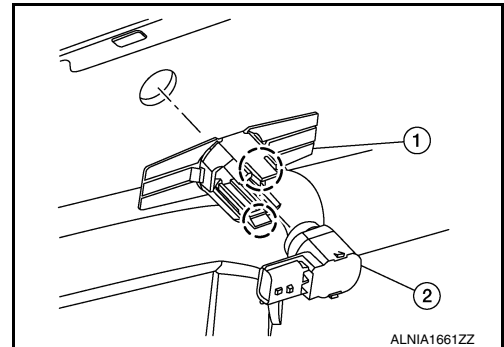
SONAR SENSOR

Removal and Installation - Front Sonar Sensors

INFOID:0000000012591024

REMOVAL

1. Remove the front bumper fascia. Refer to [EXT-25. "Removal and Installation"](#).
2. Disconnect the harness connector from front sonar sensor.
3. Release front sonar sensor finisher (1) pawls using suitable tool and remove the front sonar sensor (2) from front sonar sensor finisher.
○: Pawl
4. Remove front sonar sensor finisher from front bumper fascia (if necessary).



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

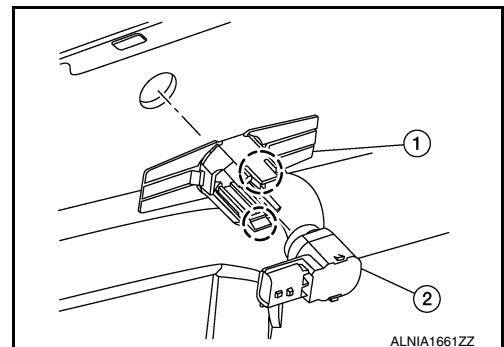
If front sonar sensor finisher is replaced clean area before installation.

Removal and Installation - Rear Sonar Sensors

INFOID:0000000012591025

REMOVAL

1. Disconnect the harness connector from rear sonar sensor.
2. Release rear sonar sensor finisher (1) pawls using suitable tool and remove the rear sonar sensor (2) from rear sonar sensor finisher.
○: Pawl
3. Remove rear sonar sensor finisher from rear bumper fascia (if necessary).



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

If rear sonar sensor finisher is replaced clean area before installation.

SONAR CONTROL UNIT

< REMOVAL AND INSTALLATION >

SONAR CONTROL UNIT

Removal and Installation

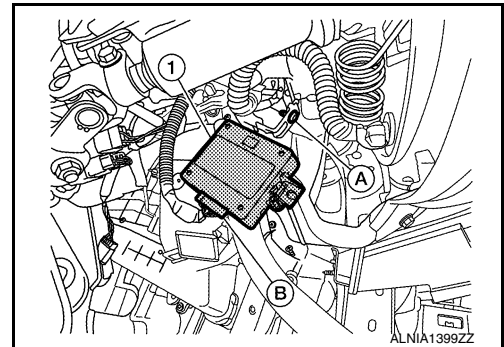
INFOID:000000012591026

REMOVAL

CAUTION:

Before replacing the sonar control unit, perform "READ CONFIGURATION" to save or print current vehicle specification. Refer to [SN-23, "ADDITIONAL SERVICE WHEN REPLACING SONAR CONTROL UNIT : Description"](#).

1. Remove the instrument lower panel LH. Refer to [JP-21, "Removal and Installation"](#).
2. Disconnect the harness connector (B) from the sonar control unit (1).
3. Remove the screw (A) from the sonar control unit (1) and remove.



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

Be sure to perform "WRITE CONFIGURATION" when replacing sonar control unit. Refer to [SN-23, "ADDITIONAL SERVICE WHEN REPLACING SONAR CONTROL UNIT : Description"](#).

BUZZER

< REMOVAL AND INSTALLATION >

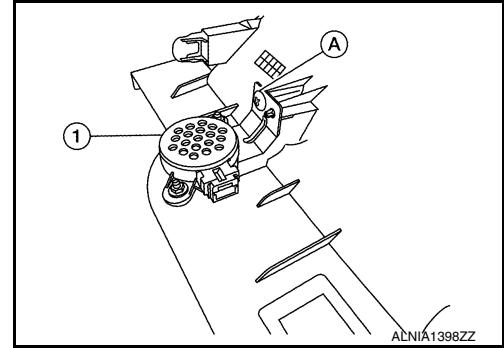
BUZZER

Removal and Installation - Front

INFOID:000000012591027

REMOVAL

1. Remove the instrument lower panel LH. Refer to [IP-21. "Removal and Installation"](#).
2. Remove the screw (A) from the front buzzer (1) and remove.



INSTALLATION

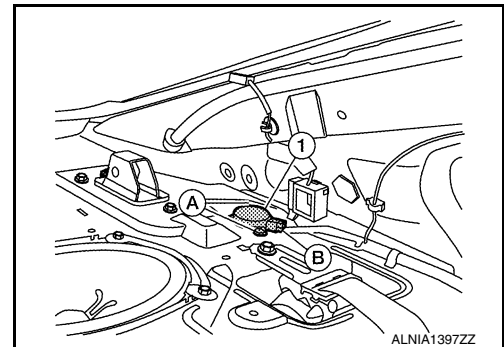
Installation is in the reverse order of removal.

Removal and Installation - Rear

INFOID:000000012591028

REMOVAL

1. Remove the rear parcel shelf finisher. Refer to [INT-26. "Removal and Installation"](#).
2. Disconnect the harness connector (B) from the rear buzzer (1).
3. Remove the clips (A) and the rear buzzer (1).



INSTALLATION

Installation is in the reverse order of removal.

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

SN