

SECTION SN

SONAR SYSTEM

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APPLICATION NOTICE

< HOW TO USE THIS MANUAL >

HOW TO USE THIS MANUAL

APPLICATION NOTICE

Information

INFOID:0000000012759027

In this manual, “SONAR” means “PARKING SENSOR”.

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PRECAUTIONS

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PRECAUTION

PRECAUTIONS

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

INFOID:0000000012779971

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 "SRS AIR BAG" and "SEAT BELT" of this Service Manual.

WARNING:

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that 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 "SRS AIR BAG".
- Never 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:

Always observe the following items for preventing accidental activation.

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never 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 3 minutes before performing any service.

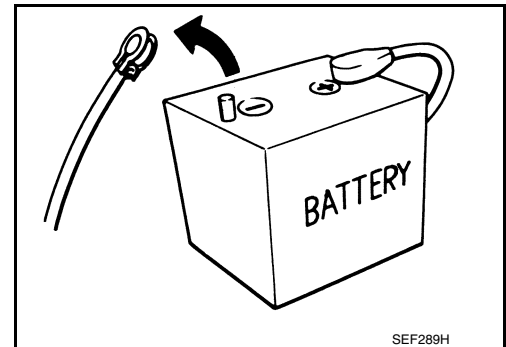
Precautions for Removing Battery Terminal

INFOID:0000000012779973

When disconnecting the battery terminal, pay attention to the following.

- Always use a 12V battery as power source.
- Never disconnect battery terminal while engine is running.
- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.
- For vehicles with the engine listed below, remove the battery terminal after a lapse of the specified time:

BR08DE	: 4 minutes	YD25DDTi	: 2 minutes
D4D engine	: 20 minutes	YS23DDT	: 4 minutes
HRA2DDT	: 12 minutes	YS23DDTT	: 4 minutes
K9K engine	: 4 minutes	ZD30DDTi	: 60 seconds
M9R engine	: 4 minutes	ZD30DDTT	: 60 seconds
R9M engine	: 4 minutes		
V9X engine	: 4 minutes		



SEF289H

NOTE:

ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.

- After high-load driving, if the vehicle is equipped with the V9X engine, turn the ignition switch OFF and wait for at least 15 minutes to remove the battery terminal.

NOTE:

PRECAUTIONS

< PRECAUTION >

- Turbocharger cooling pump may operate in a few minutes after the ignition switch is turned OFF.
- Example of high-load driving
 - Driving for 30 minutes or more at 140 km/h (86 MPH) or more.
 - Driving for 30 minutes or more on a steep slope.
- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch.

NOTE:

If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.

- After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC.

NOTE:

The removal of 12V battery may cause a DTC detection error.

Precaution for Trouble Diagnosis

INFOID:000000012779974

AV COMMUNICATION SYSTEM

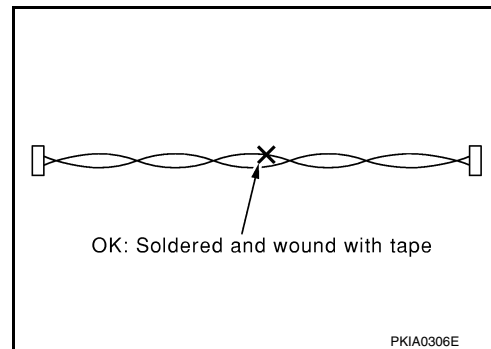
- Do not apply voltage of 7.0 V or higher to the measurement terminals.
- Use the tester with its open terminal voltage being 7.0 V or less.
- Be sure to turn ignition switch OFF and disconnect the battery cable from the negative terminal before checking the circuit.

Precaution for Harness Repair

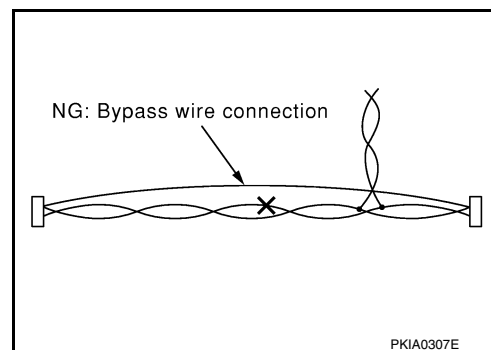
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AV COMMUNICATION SYSTEM

- Solder the repaired parts, and wrap with tape. [Frays of twisted line must be within 110 mm (4.33 in).]



- Do not perform bypass wire connections for the repair parts. (The spliced wire will become separated and the characteristics of twisted line will be lost.)



PREPARATION

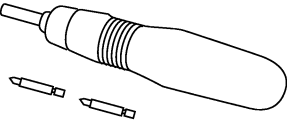
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PREPARATION

PREPARATION

Commercial Service Tools

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Tool	Description
<p>Power tool</p>  <p>PBIC0191E</p>	<p>Loosening screws</p>

Lubricant or/and Sealant

INFOID:0000000012779966

Name	Description	Note
Primer (Sumitomo 3M K520 or equivalent)	Primer for attaching sonar sensor holder to bumper	Sumitomo 3M Limited

COMPONENT PARTS

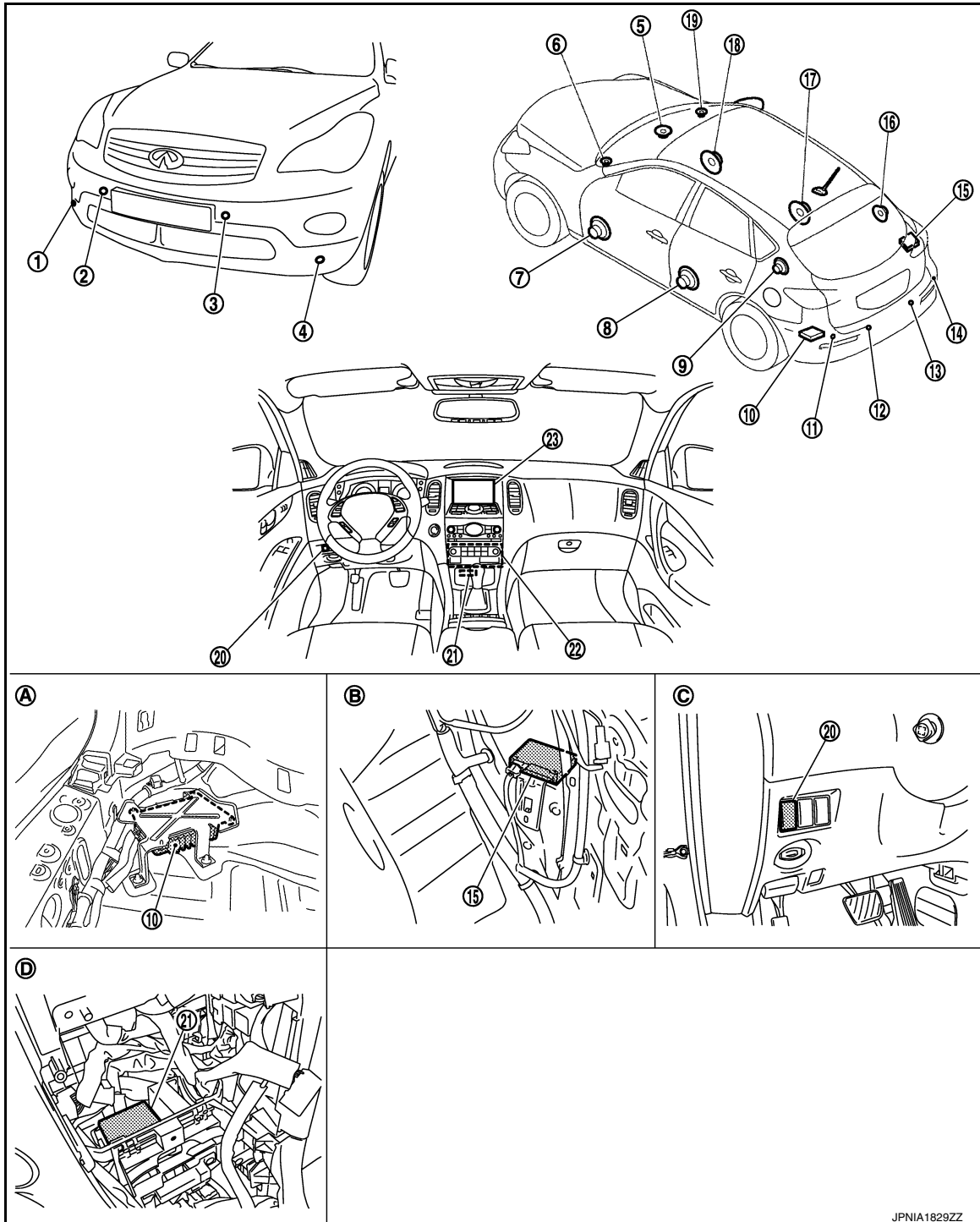
< SYSTEM DESCRIPTION >

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

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- | | | |
|---------------------------|---------------------------|---------------------------|
| 1. Corner sensor front RH | 2. Center sensor front RH | 3. Center sensor front LH |
| 4. Corner sensor front LH | 5. Center speaker | 6. Front squawker LH |
| 7. Front door speaker LH | 8. Rear door speaker LH | 9. Rear squawker LH |
| 10. BOSE amp. | 11. Corner sensor rear LH | 12. Center sensor rear LH |
| 13. Center sensor rear RH | 14. Corner sensor rear RH | 15. Buzzer (backward) |

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COMPONENT PARTS

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|-------------------------------------|--------------------------|-------------------------------|
| 16. Rear squawker RH | 17. Rear door speaker RH | 18. Front door speaker RH |
| 19. Front squawker RH | 20. Sonar cancel switch | 21. Sonar control unit |
| 22. AV control unit | 23. Display unit | |
| A Luggage floor (LH side). | B. Luggage side RH. | C. Instrument lower panel LH. |
| D. Cluster lid C removed condition. | | |

Component Description

INFOID:0000000012759032

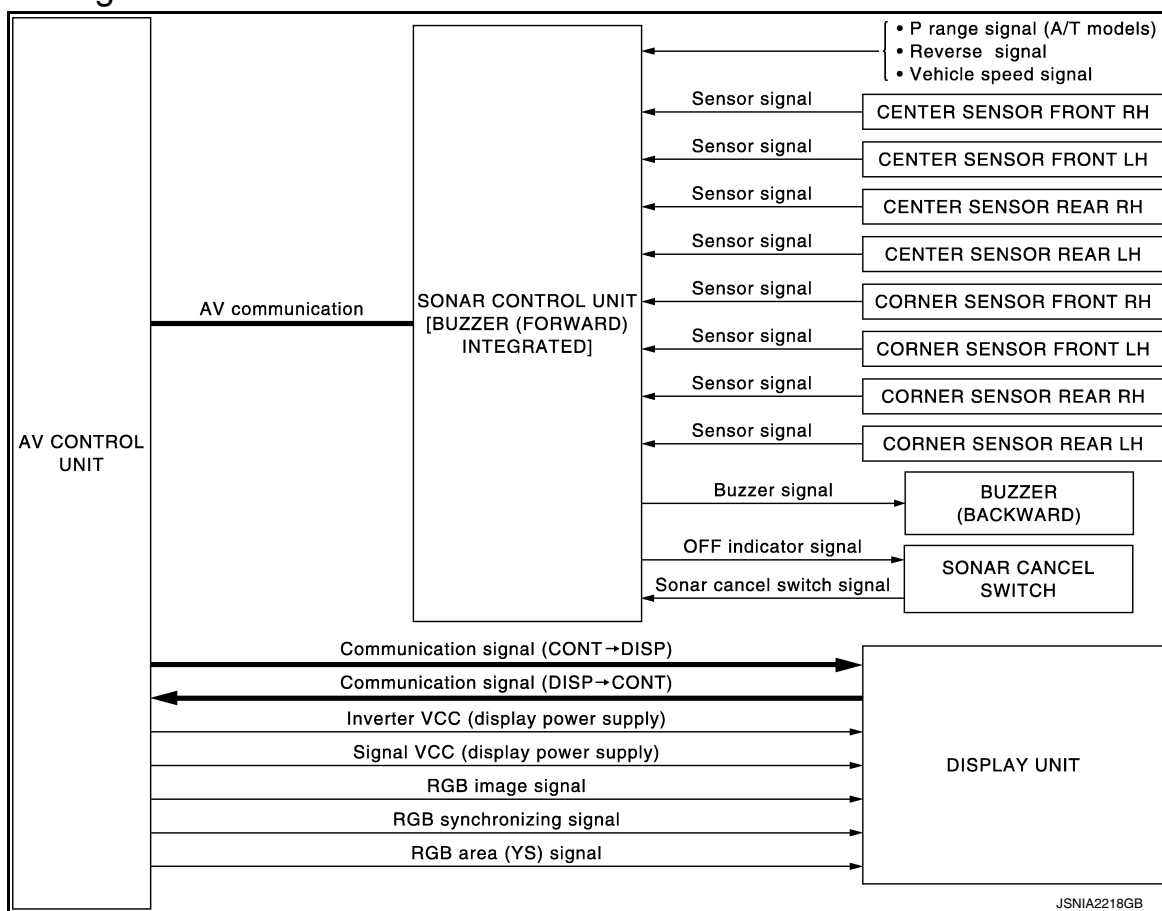
Component	Description
SONAR CONTROL UNIT	<ul style="list-style-type: none"> The front warning buzzer is integrated. The warning buzzer outputs by inputting the sensor signal from corner/center sensor. The rear warning buzzer outputs the separated buzzer. The activation condition is controlled by inputting P range signal, the reverse signal and the vehicle speed signal. Converts a signal received from the corner sensor and the center sensor into distance (center sensor: four levels, corner sensor: three levels) and transmits it to the AV control unit via AV communication. The system turns OFF with sonar cancel switch signal. It receives the sonar display cancel switch signal and from AV control unit via AV communication. The system setting and the trouble diagnosis is supported with CONSULT (K-LINE).
CORNER SENSOR (LH, RH)	The obstacle distance is detected. The signal is transmitted to the sonar control unit.
CENTER SENSOR (LH, RH)	The obstacle distance is detected. The signal is transmitted to the sonar control unit.
BUZZER (BACKWARD)	The warning buzzer outputs with the signal from the sonar control unit. (For rear warning buzzer)
SONAR CANCEL SWITCH	The cancel signal is transmitted to the sonar control unit.
AV CONTROL UNIT	<ul style="list-style-type: none"> Image on display is switched to serial communication between AV control unit and display unit. RGB image signal (sonar warning display) is transmitted to the display unit.
DISPLAY UNIT	<ul style="list-style-type: none"> RGB image signal (sonar warning display) is transmitted from AV control unit. Image on display is switched to serial communication between AV control unit and display unit.

SYSTEM

< SYSTEM DESCRIPTION >

SYSTEM

System Diagram



System Description

INFOID:0000000012759030

- The sonar sensor installed to the front bumper and the rear bumper detects obstacles around the bumper.
- When the front corner sensor or the front center sensor detects an obstacle, the buzzer built in the sonar control unit sounds and the location of the obstacle and a warning message are displayed in full-screen on the display unit.
- When the front corner sensor, front center sensor, rear corner sensor, or the rear center sensor detects an obstacle during rear view monitor indication, the buzzer sounds and the location of the obstacle is displayed on the display unit by icon display.
- Sonar system turns ON/OFF with the sonar cancel switch.
- The sonar control unit is connected to the AV control unit with the AV communication.
- Sonar control unit is connected to the diagnosis connector through K-Line and allows diagnoses with CONSULT.

Warning by Buzzer

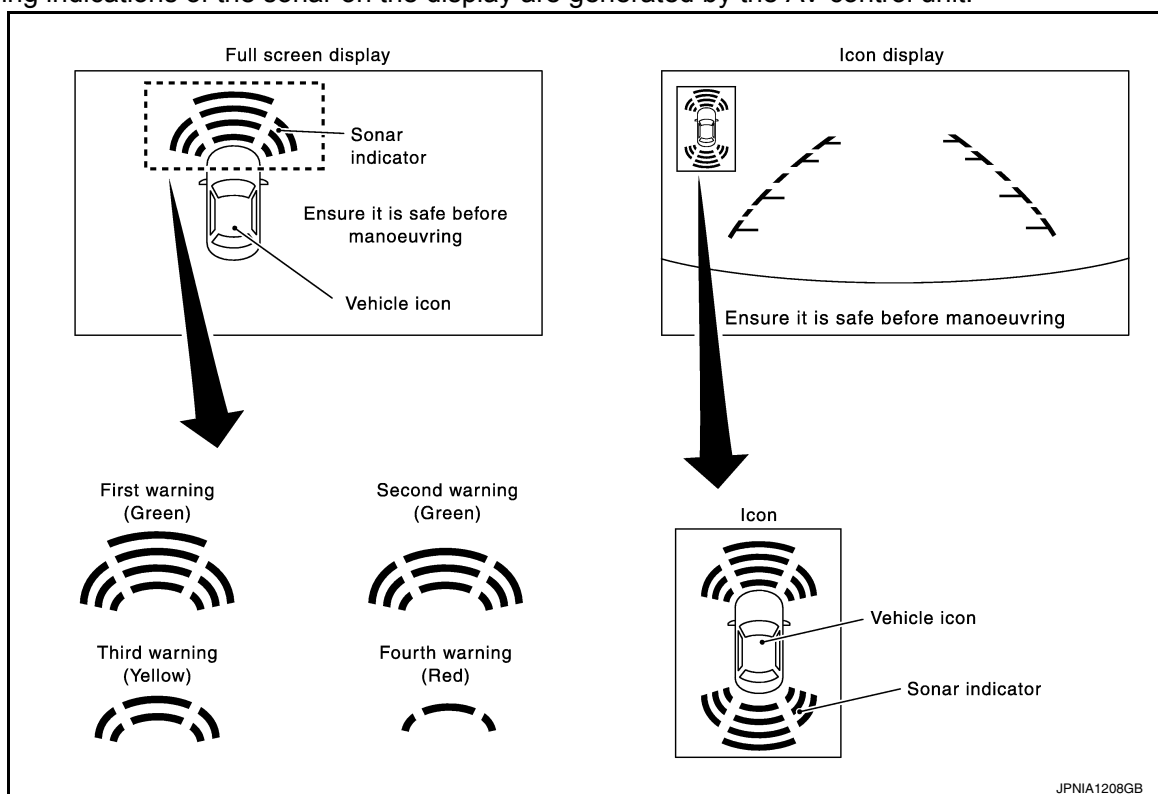
- When an obstacle is detected on the front side, the sonar control unit (with buzzer) generates a low-pitched sound. When an obstacle is detected on the rear side, buzzer sounds with a high-pitched sound.
- The cycle of buzzer changes according to the distance from an obstacle: the center sensor in four levels; the corner sensor, in three levels.
- Each sonar sensor transmits a sensor signal to the sonar control unit when detecting an obstacle.
- When receiving a sensor signal, the buzzer built in the sonar control unit sounds if an obstacle is detected on the front side of the vehicle. If an obstacle is detected on the rear side of the vehicle, the sonar control unit transmits a buzzer signal to buzzer (backward).
- When receiving a buzzer signal, buzzer (backward) sounds.

Warning by Indicator

SYSTEM

< SYSTEM DESCRIPTION >

- Detecting an obstacle except when in reverse gear (during map screen, etc.), the direction and the distance to the obstacle are displayed in full-screen.
- Detecting an obstacle when in reverse gear, the direction and the distance to the obstacle are displayed with icons on the rear view monitor.
- The color and the number of bars of the sonar indicator changes, according to the distance to an obstacle (during full-screen display).
- The color and the number of blinks of the sonar indicator changes, according to the distance to an obstacle (during icon indication).
- The sonar display function can be turned ON/OFF from the SETTING of Other. In this case, buzzer sounds by turning OFF the display function.
- Each sonar sensor transmits a sensor signal to the sonar control unit when detecting an obstacle.
- The sonar control unit converts a signal received from each sonar sensor into distance (center sensor: four levels, corner sensor: three levels) and transmits it to the AV control unit via AV communication.
- The AV control unit transmits an RGB image signal to the display unit, based on the received signal.
- When receiving an RGB image signal, the display unit indicates "Full screen display" or "Icon display."
- Warning indications of the sonar on the display are generated by the AV control unit.



ACTIVATION CONDITION

Front Sensor

The front sensor activates in the following conditions.

- Sonar cancel switch OFF
- P range signal OFF
- The vehicle speed signal is within the activation condition.
- Obstacle detection

Rear Sensor

The rear sensor activates in the following conditions.

- Sonar cancel switch OFF
- Reverse signal ON
- P range signal OFF
- Obstacle detection

SYSTEM

< SYSTEM DESCRIPTION >

x: applicable

Sonar cancel switch	Reverse signal	P range signal	Vehicle speed signal	Front sensor	Rear sensor
OFF	ON	OFF	—	X*	X*
OFF	OFF	OFF	Within the condition	X	—

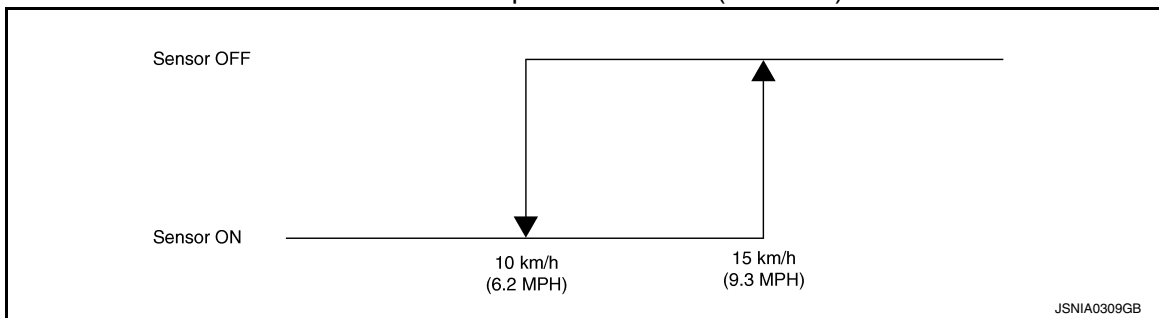
NOTE:

*: When the front sensor and the rear sensor simultaneously detect different obstacle:

- The sonar sensor detecting shorter distance from the object has priority to sound a buzzer. In addition, when detected distances are the same, the rear sensor has priority to sound a buzzer.
- The warning indicator simultaneously displays the detecting state from both front and rear sensors.

Vehicle Speed Signal Activation Condition Range

- The sensor activation turns OFF when the vehicle drives at 15 km/h (9.3 MPH) or more to the forward direction.
- The sensor activation starts when the vehicle speed is 10 km/h (6.2 MPH) or less.



OBSTACLE DETECTION DISTANCE

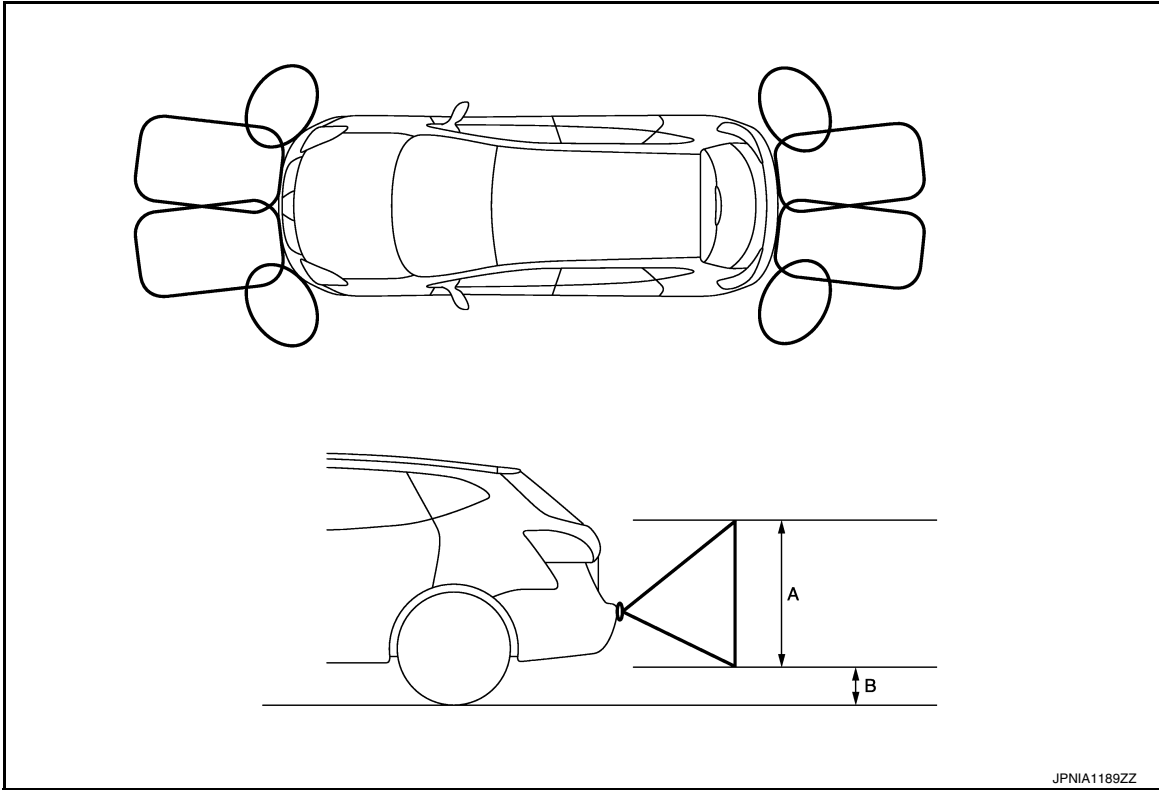
- The sonar control unit controls the obstacle detection distance. The detection distance differs between the corner sensor and the center sensor.
- The sonar control unit outputs the warning buzzer output frequency which changes 4 levels (for center) and 3 levels (for corner) according to the detection distance.
- The detection condition setting is adjustable to 4 levels with CONSULT. Refer to [SN-14. "CONSULT Function \(SONAR\)"](#).
- CONSULT enables the center sensor (rear) not to detect the range of 40 cm (15.75 in) or less to prevent from the trailer hitch vehicles detection error. Refer to [SN-14. "CONSULT Function \(SONAR\)"](#).

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SYSTEM

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Obstacle detection range image



A. Approx. 50 cm (19.6 in)

B. Approx. 15 cm (5.9 in)

Detection distance (default value)

Warning item	Corner sensor	Center sensor
First warning	—	70 – 110 cm (27.6 – 43.3 in)
Second warning	60 – 70 cm (23.6 – 27.6 in)	60 – 70 cm (23.6 – 27.6 in)
Third warning	40 – 60 cm (15.8 – 23.6 in)	40 – 60 cm (15.8 – 23.6 in)
Fourth warning	Less than 40 cm (15.8 in)	Less than 40 cm (15.8 in)

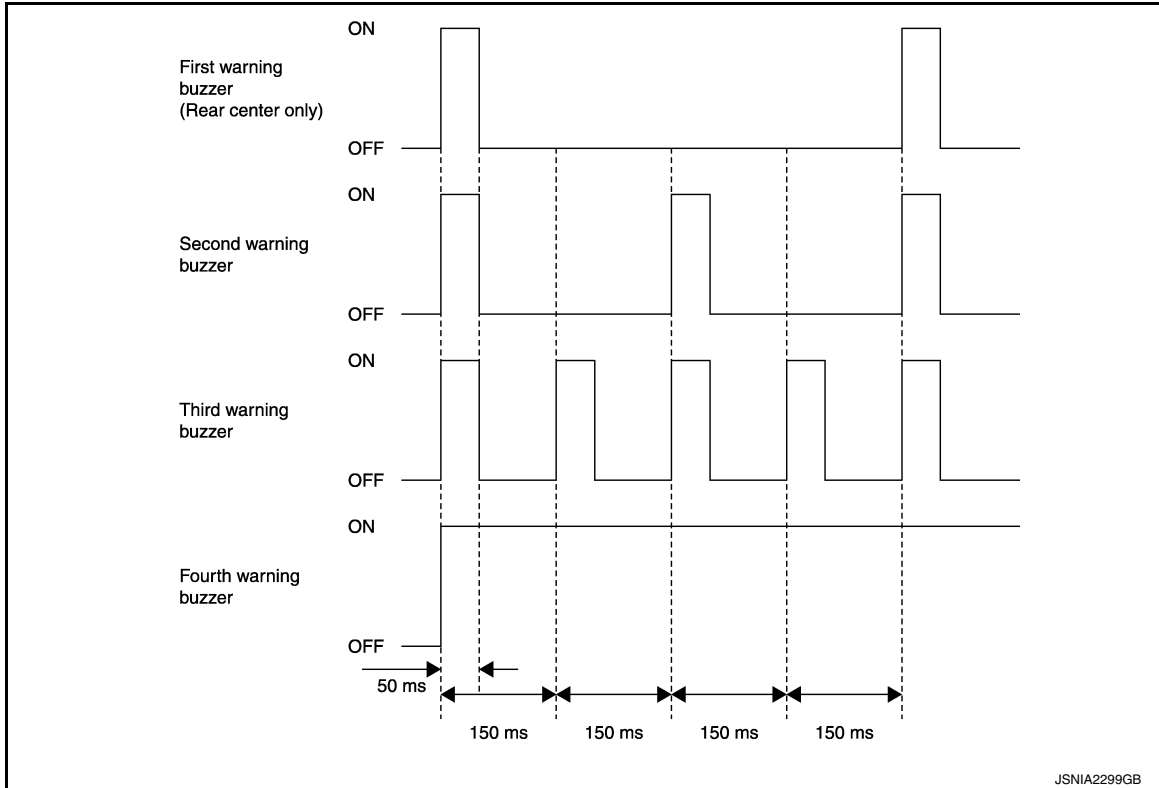
Warning Buzzer Frequency

- The warning buzzer output frequency changes among 4 levels (for rear center) or 3 levels (for front center and corner) according to the detection distance.
- The nearest sensor from the detected obstacle applies the buzzer output frequency if plural sensors detect any obstacle simultaneously.

SYSTEM

< SYSTEM DESCRIPTION >

- If both the front and the rear sensor detect different objects simultaneously, the sensor which detects the closer object is prior to another sensor. If the detection distance is equal between the front and the rear, warning buzzer of rear sounds. (The front and the rear buzzers do not output the sounds simultaneously.)



NOTE:

The warning buzzer of the corner sensor sounds as follows:

- As for the first, second, and third stages, the warning 3 seconds at maximum.
- As for the fourth stage, the warning buzzer does not stop even after a lapse of 3 seconds.
- Buzzer stops when the vehicle moves away from an obstacle and the warning level decreases.

DIAGNOSIS SYSTEM (SONAR CONTROL UNIT)

< SYSTEM DESCRIPTION >

DIAGNOSIS SYSTEM (SONAR CONTROL UNIT)

CONSULT Function (SONAR)

INFOID:0000000012759033

DESCRIPTION

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

Test mode	Function
Ecu Identification	Sonar control unit part number can be read.
Self Diagnostic Results	Sonar control unit checks the conditions and displays memorized error.
Data Monitor	Sonar control unit input/output data in real time.
Active Test	Gives a drive signal to a load to check the operation.
Work support	Changes setting of each function.

ECU IDENTIFICATION

Displays the part number of the sonar control unit.

SELF-DIAGNOSTIC RESULTS

For details, refer to [SN-22, "DTC Index"](#).

DATA MONITOR

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

Monitor Item	Display	Description
FRONT BUZZER	On	Buzzer (forward) output condition.
	Off	Buzzer (forward) non-output condition.
REAR BUZZER	On	Buzzer (backward) output condition.
	Off	Buzzer (backward) non-output condition.
P RANGE	On	Shift the selector lever to P position.
	Off	Shift the selector lever other than P position.
REVERSE RANGE	On	Shift the selector lever to R position.
	Off	Shift the selector lever other than R position.
CANCEL SW	On	While pressing the sonar cancel switch.
	Off	Other than above.
CANCEL SW IND	On	When sonar cancel switch indicator lamp is ON.
	Off	When sonar cancel switch indicator lamp is OFF.
VHCL SPE COND	On	Turns ON when the vehicle speed is 10 km/h (6.2 MPH) or less while accelerating.
	Off	Turns OFF when the vehicle speed is 15 km/h (9.3 MPH) or more while decelerating.
CR SEN [FL] CR SEN [FR] CR SEN [RL] CR SEN [RR]	ERROR	When a sensor is abnormal.
	LV.0	When a sensor is not detection.
	LV.2	The distance between the corner sensor and an obstacle is 60 cm (23.6 in) or more and less than 70 cm (27.6 in).
	LV.3	The distance between the corner sensor and an obstacle is 40 cm (15.8 in) or more and less than 60 cm (23.6 in).
	LV.4	The distance between corner sensor and an obstacle less than 40 cm (15.8 in).

DIAGNOSIS SYSTEM (SONAR CONTROL UNIT)

< SYSTEM DESCRIPTION >

Monitor Item	Display	Description
CTR SEN [FL] CTR SEN [FR] CTR SEN [RL] CTR SEN [RR]	ERROR	When a sensor is abnormal.
	LV.0	When a sensor is not detection.
	LV.1	The distance between the center sensor and an obstacle is 70 cm (27.6 in) or more and less then 110 cm (43.3 in).
	LV.2	The distance between the center sensor and an obstacle is 60 cm (23.6 in) or more and less then 70 cm (27.6 in).
	LV.3	The distance between the center sensor and an obstacle is 40 cm (15.8 in) or more and less then 60 cm (23.6 in).
	LV.4	The distance between center sensor and an obstacle less than 40 cm (15.8 in).
DISPLAY INFO	On	Warning message indication condition.
	Off	Warning message non-indication condition.

ACTIVE TEST

Active test item	Function
BUZZER	This test is able to check buzzer (forward/backward) operation.
CANCEL SW	This test is able to check cancel indicator lamp operation.
SONAR SENSOR	This test is able to check each sonar sensor operation.

WORK SUPPORT

Work support item	Function
CORNER SEN DISTANCE SET	Corner sensor warning buzzer distance is adjustable to 4 phases.
CENTER SEN DISTANCE SET	Center sensor warning buzzer distance is adjustable to 4 phases.
VOLUME SETTING	Warning buzzer volume can set it 2 phases.
TRAILER HITCH MODE	Center sensor (RR, RL) only is adjustable not to detect the distance less than 40 cm (15.7 in). NOTE: This adjustment is for preventing to miss detect the distance when installing the trailer hitch.

CORNER SEN DISTANCE SET

Corner sensor warning buzzer distance can set it to 4 phases as follows.

Warning item	FARTHER	FAR (Default)	NORMAL	NEAR
Second stage warning	70 – 80 cm (27.6 – 31.5 in)	60 – 70 cm (23.6 – 27.6 in)	50 – 60 cm (19.7 – 23.6 in)	40 – 50 cm (15.8 – 19.7 in)
Third stage warning	50 – 70 cm (19.7 – 27.6 in)	40 – 60 cm (15.8 – 23.6 in)	30 – 50 cm (11.8 – 19.7 in)	30 – 40 cm (11.8 – 15.8 in)
Fourth stage warning	Less than 50 cm (19.7 in)	Less than 40 cm (15.8 in)	Less than 30 cm (11.8 in)	Less than 30 cm (11.8 in)

The default of this model is "FAR".

CENTER SEN DISTANCE SET

Center sensor warning buzzer distance can set it to 4 phases as follows.

Warning item	FARTHER	FAR (Default)	NORMAL	NEAR
First stage warning	80 – 120 cm (31.5 – 47.2 in)	70 – 110 cm (27.6 – 43.3 in)	60 – 100 cm (23.6 – 39.4 in)	50 – 90 cm (19.7 – 35.4 in)
Second stage warning	70 – 80 cm (27.6 – 31.5 in)	60 – 70 cm (23.6 – 27.6 in)	50 – 60 cm (19.7 – 23.6 in)	40 – 50 cm (15.8 – 19.7 in)
Third stage warning	50 – 70 cm (19.7 – 27.6 in)	40 – 60 cm (15.8 – 23.6 in)	30 – 50 cm (11.8 – 19.7 in)	30 – 40 cm (11.8 – 15.8 in)
Fourth stage warning	Less than 50 cm (19.7 in)	Less than 40 cm (15.8 in)	Less than 30 cm (11.8 in)	Less than 30 cm (11.8 in)

DIAGNOSIS SYSTEM (SONAR CONTROL UNIT)

< SYSTEM DESCRIPTION >

The default of this model is "FAR".

VOLUME SETTING

Warning buzzer volume can set it to 2 phases.

TRAILER HITCH MODE

Center sensor (RR, RL) only is adjustable not to detect the distance less than 40 cm (15.7 in).

When installing the trailer hitch : ON

When not installing the trailer hitch : OFF

SONAR CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

ECU DIAGNOSIS INFORMATION

SONAR CONTROL UNIT

Reference Value

INFOID:0000000012759087

VALUES ON THE DIAGNOSIS TOOL

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

CONSULT MONITOR ITEM

Monitor Item	Condition		Value/Status
FRONT BUZZER	Ignition switch ON	Buzzer (forward) output condition.	On
		Buzzer (forward) non-output condition.	Off
REAR BUZZER	Ignition switch ON	Buzzer (backward) output condition.	On
		Buzzer (backward) non-output condition.	Off
P RANGE	Ignition switch ON	Shift the selector lever to P position.	On
		Shift the selector lever other than P position.	Off
REVERSE RANGE	Ignition switch ON	Shift the selector lever to R position.	On
		Shift the selector lever other than R position.	Off
CANCEL SW	Ignition switch ON	While pressing the sonar cancel switch.	On
		Other than above.	Off
CANCEL SW IND	Ignition switch ON	When sonar cancel switch indicator lamp is ON.	On
		When sonar cancel switch indicator lamp is OFF.	Off
VHCL SPE COND	Ignition switch ON	Turns ON when the vehicle speed is 10 km/h (6.2 MPH) or less while accelerating.	On
		Turns OFF when the vehicle speed is 15 km/h (9.3 MPH) or more while decelerating.	Off
CR SEN [FL]	Ignition switch ON	When a sensor is abnormal.	ERROR
		When a sensor is not detection.	LV.0
		The distance between the corner sensor and an obstacle is 60 cm (23.6 in) or more and less then 70 cm (27.6 in).	LV.2
		The distance between the corner sensor and an obstacle is 40 cm (15.8 in) or more and less then 60 cm (23.6 in).	LV.3
		The distance between corner sensor and an obstacle less than 40 cm (15.8 in).	LV.4
CR SEN [FR]	Ignition switch ON	When a sensor is abnormal.	ERROR
		When a sensor is not detection.	LV.0
		The distance between the corner sensor and an obstacle is 60 cm (23.6 in) or more and less then 70 cm (27.6 in).	LV.2
		The distance between the corner sensor and an obstacle is 40 cm (15.8 in) or more and less then 60 cm (23.6 in).	LV.3
		The distance between corner sensor and an obstacle less than 40 cm (11.8 in).	LV.4

SONAR CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

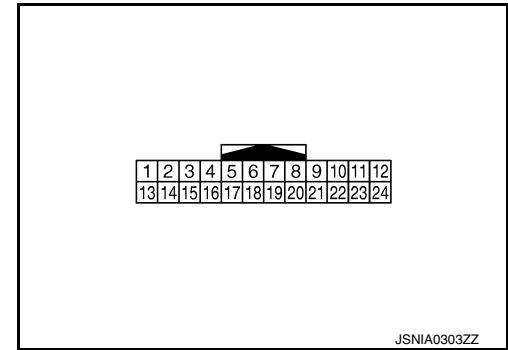
Monitor Item	Condition		Value/Status
CR SEN [RL]	Ignition switch ON	When a sensor is abnormal.	ERROR
		When a sensor is not detection.	LV.0
		The distance between the corner sensor and an obstacle is 60 cm (23.6 in) or more and less then 70 cm (27.6 in).	LV.2
		The distance between the corner sensor and an obstacle is 40 cm (15.8 in) or more and less then 60 cm (19.6 in).	LV.3
		The distance between corner sensor and an obstacle less than 40 cm (15.8 in).	LV.4
CR SEN [RR]	Ignition switch ON	When a sensor is abnormal.	ERROR
		When a sensor is not detection.	LV.0
		The distance between the corner sensor and an obstacle is 60 cm (23.6 in) or more and less then 70 cm (27.6 in).	LV.2
		The distance between the corner sensor and an obstacle is 40 cm (15.8 in) or more and less then 60 cm (23.6 in).	LV.3
		The distance between corner sensor and an obstacle less than 40 cm (15.8 in).	LV.4
CTR SEN [FL]	Ignition switch ON	When a sensor is abnormal.	ERROR
		When a sensor is not detection.	LV.0
		The distance between the center sensor and an obstacle is 70 cm (27.6 in) or more and less then 110 cm (43.3 in).	LV.1
		The distance between the center sensor and an obstacle is 60 cm (23.6 in) or more and less then 70 cm (27.6 in).	LV.2
		The distance between the center sensor and an obstacle is 40 cm (15.8 in) or more and less then 60 cm (23.6 in).	LV.3
		The distance between center sensor and an obstacle less than 40 cm (15.8 in).	LV.4
CTR SEN [FR]	Ignition switch ON	When a sensor is abnormal.	ERROR
		When a sensor is not detection.	LV.0
		The distance between the center sensor and an obstacle is 70 cm (27.6 in) or more and less then 110 cm (43.3 in).	LV.1
		The distance between the center sensor and an obstacle is 60 cm (23.6 in) or more and less then 70 cm (27.6 in).	LV.2
		The distance between the center sensor and an obstacle is 40 cm (15.8 in) or more and less then 60 cm (23.6 in).	LV.3
		The distance between center sensor and an obstacle less than 40 cm (15.8 in).	LV.4
CTR SEN [RL]	Ignition switch ON	When a sensor is abnormal.	ERROR
		When a sensor is not detection.	LV.0
		The distance between the center sensor and an obstacle is 70 cm (27.6 in) or more and less then 110 cm (43.3 in).	LV.1
		The distance between the center sensor and an obstacle is 60 cm (23.6 in) or more and less then 70 cm (27.6 in).	LV.2
		The distance between the center sensor and an obstacle is 40 cm (15.8 in) or more and less then 60 cm (23.6 in).	LV.3
		The distance between center sensor and an obstacle less than 40 cm (15.8 in).	LV.4

SONAR CONTROL UNIT

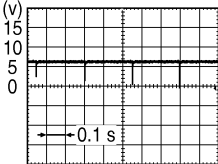
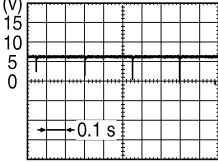
< ECU DIAGNOSIS INFORMATION >

Monitor Item	Condition		Value/Status
CTR SEN [RR]	Ignition switch ON	When a sensor is abnormal.	ERROR
		When a sensor is not detection.	LV.0
		The distance between the center sensor and an obstacle is 70 cm (27.6 in) or more and less then 110 cm (43.3 in).	LV.1
		The distance between the center sensor and an obstacle is 60 cm (23.6 in) or more and less then 70 cm (27.6 in).	LV.2
		The distance between the center sensor and an obstacle is 40 cm (15.8 in) or more and less then 60 cm (23.6 in).	LV.3
		The distance between center sensor and an obstacle less than 40 cm (15.8 in).	LV.4
DISPLAY INFO	Ignition switch ON	Warning message indication condition.	On
		Warning message non-indication condition.	Off

TERMINAL LAYOUT

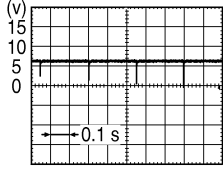
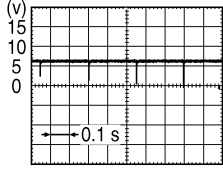
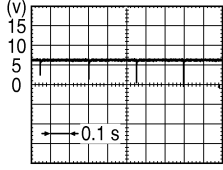
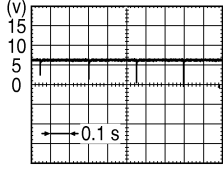
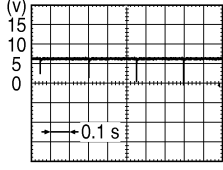
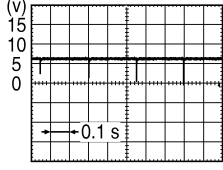


PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
1 (W)	Ground	Ignition signal	Input	Ignition switch ON	—	Battery voltage
2 (R)	Ground	Sonar system OFF switch signal	Input	Ignition switch ON	While pressing the sonar cancel switch.	2.0 V
					Other than above.	12.0 V
3 (L)	12 (B)	Corner sensor signal front LH	Input	Ignition switch ON	Shift the selector lever other than P position.	 SKIB8942E
4 (Y)	12 (B)	Corner sensor signal front RH	Input	Ignition switch ON	Shift the selector lever other than P position.	 SKIB8942E

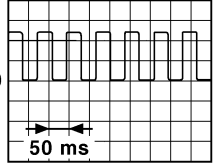
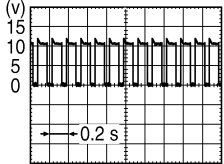
SONAR CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
5 (W)	12 (B)	Corner sensor signal rear LH	Input	Ignition switch ON	Shift the selector lever to R position.	 SKIB8942E
6 (B)	12 (B)	Corner sensor signal rear RH	Input	Ignition switch ON	Shift the selector lever to R position.	 SKIB8942E
7 (G)	12 (B)	Center sensor signal rear LH	Input	Ignition switch ON	Shift the selector lever to R position.	 SKIB8942E
8 (Y)	12 (B)	Center sensor signal rear RH	Input	Ignition switch ON	Shift the selector lever to R position.	 SKIB8942E
9 (R)	12 (B)	Center sensor signal front LH	Input	Ignition switch ON	Shift the selector lever oth- er than P position.	 SKIB8942E
10 (W)	12 (B)	Center sensor signal front RH	Input	Ignition switch ON	Shift the selector lever oth- er than P position.	 SKIB8942E
11 (SB)	Ground	Sonar cancel switch indica- tor signal	Output	Ignition switch ON	Sonar cancel switch indica- tor lamp is ON.	0 V
					Sonar cancel switch indica- tor lamp is OFF.	12.0 V

SONAR CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	—	Signal name	Input/ Output			
13 (V)	Ground	ACC power supply	Input	Ignition switch ACC	—	Battery voltage
15 (G)	Ground	Vehicle speed signal (2-pulse)	Input	Ignition switch ON	When vehicle speed is ap- prox. 40 km/h (25 MPH)	NOTE: The maximum voltage varies de- pending on the specification (destination unit).  <small>JSNIA0015GB</small>
16 (BR)	Ground	P range signal	Input	Ignition switch ON	Shift the selector lever to P position.	0 V
					Shift the selector lever oth- er than P position.	12.0 V
17 (BR)	Ground	Reverse range signal	Input	Ignition switch ON	Shift the selector lever to R position.	12.0 V
					Shift the selector lever oth- er than R position.	0 V
18 (V)	—	K-line (CONSULT)	—	—	—	—
19 (G)	—	AV communication signal (H)	Input/ Output	—	—	—
20 (R)	—	AV communication signal (L)	Input/ Output	—	—	—
23 (GR)	Ground	Buzzer drive signal	Output	Ignition switch ON	When buzzer operation.	NOTE: Waveform period changes due to the distance to an obstacle.  <small>SKIB8943E</small>
					Other than above.	12.0 V
24 (B)	Ground	Ground	—	Ignition switch ON	—	0 V

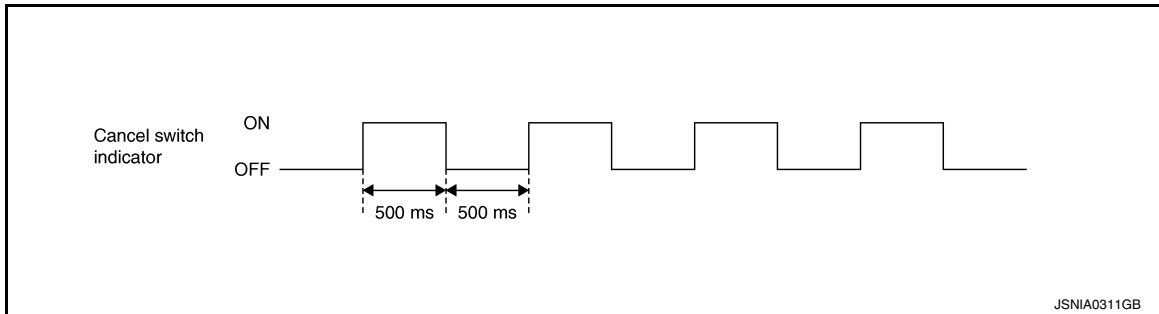
SONAR CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

Fail-Safe

INFOID:000000012759090

The warning buzzer function shuts off and the cancel switch indicator blinks when the sensor system error is detected.



DTC Index

INFOID:000000012759091

DTC	Display item [Code]	Malfunction is detected when...	Reference
B2700	CORNER SENSOR [FL] [B2700]	Corner sensor front LH is malfunctioning.	SN-36, "DTC Logic"
B2701	SENSOR HARNESS OPEN [CR-FL] [B2701]	Corner sensor front LH harness circuit is open.	SN-37, "Diagnosis Procedure"
B2702	CORNER SENSOR [FR] [B2702]	Corner sensor front RH is malfunctioning.	SN-38, "DTC Logic"
B2703	SENSOR HARNESS OPEN [CR-FR] [B2703]	Corner sensor front RH harness circuit is open.	SN-39, "Diagnosis Procedure"
B2704	CORNER SENSOR [RL] [B2704]	Corner sensor rear LH is malfunctioning.	SN-40, "DTC Logic"
B2705	SENSOR HARNESS OPEN [CR-RL] [B2705]	Corner sensor rear LH harness circuit is open.	SN-41, "Diagnosis Procedure"
B2706	CORNER SENSOR [RR] [B2706]	Corner sensor rear RH is malfunctioning.	SN-42, "DTC Logic"
B2707	SENSOR HARNESS OPEN [CR-RR] [B2707]	Corner sensor rear RH harness circuit is open.	SN-43, "Diagnosis Procedure"
B2708	CENTER SENSOR [RL] [B2708]	Center sensor rear LH is malfunctioning.	SN-44, "DTC Logic"
B2709	SENSOR HARNESS OPEN [CT-BL] [B2709]	Center sensor rear LH harness circuit is open.	SN-45, "Diagnosis Procedure"
B270A	CENTER SENSOR [RR] [B270A]	Center sensor rear RH is malfunctioning.	SN-46, "DTC Logic"
B270B	SENSOR HARNESS OPEN [CT-BR] [B270B]	Center sensor rear RH harness circuit is open.	SN-47, "Diagnosis Procedure"
B270C	CENTER SENSOR [FL] [B270C]	Center sensor front LH is malfunctioning.	SN-48, "DTC Logic"
B270D	SENSOR HARNESS OPEN [CT-FL] [B270D]	Center sensor front LH harness circuit is open.	SN-49, "Diagnosis Procedure"
B270E	CENTER SENSOR [FR] [B270E]	Center sensor front RH is malfunctioning.	SN-50, "DTC Logic"
B270F	SENSOR HARNESS OPEN [CT-FR] [B270F]	Center sensor front RH harness circuit is open.	SN-51, "Diagnosis Procedure"

NOTE:

"TIME" means the following.

- 0: Means detected malfunction at present. (From malfunction detection to turning ignition switch OFF)
- 1–39: Means detected malfunction in past.

SONAR SYSTEM

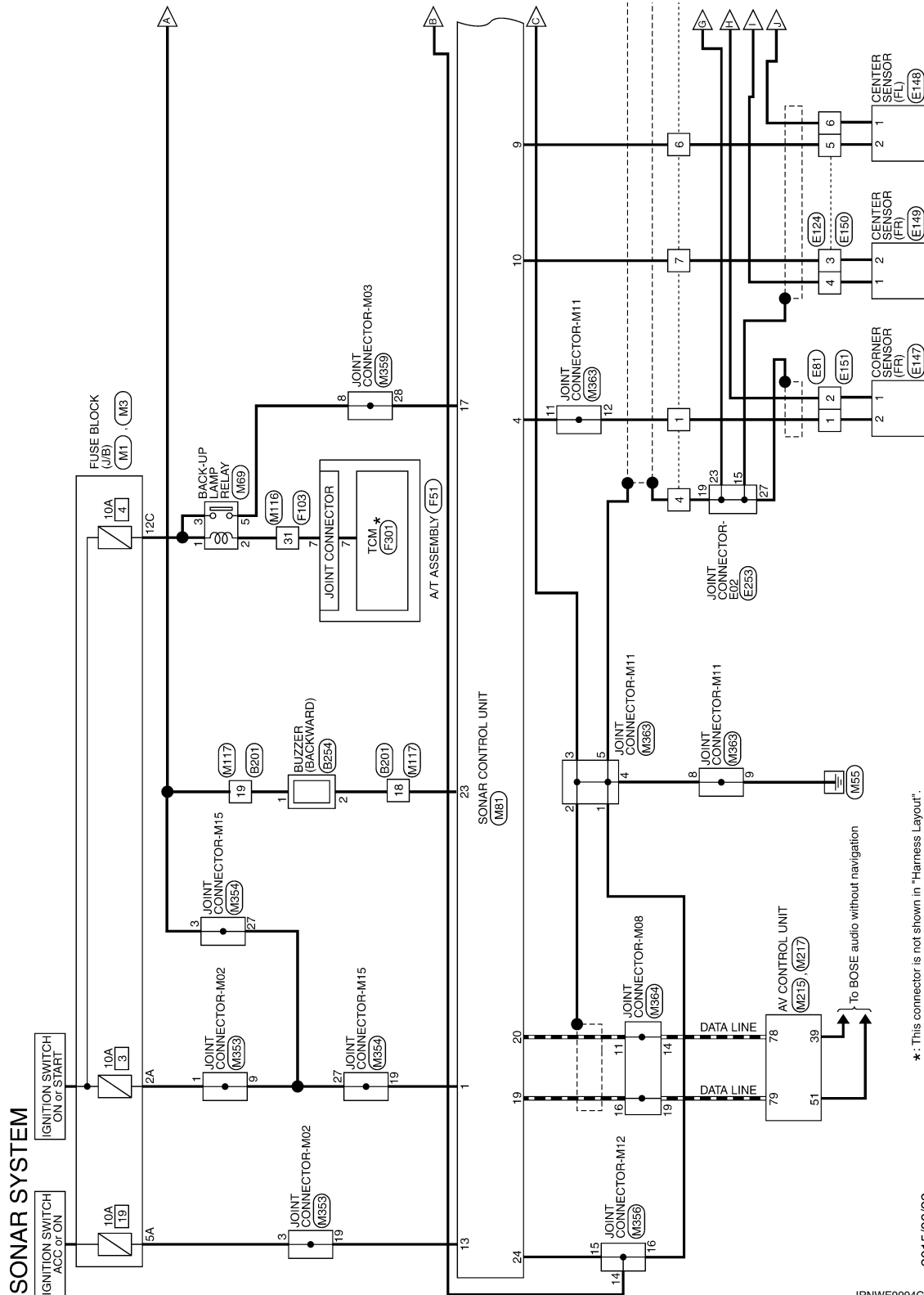
< WIRING DIAGRAM >

WIRING DIAGRAM

SONAR SYSTEM

Wiring Diagram

INFOID:0000000012759088

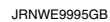


*: This connector is not shown in "Harness Layout".

2015/06/22

JRNWE9994GB

< WIRING DIAGRAM >

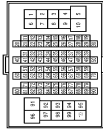


SONAR SYSTEM

< WIRING DIAGRAM >

SONAR SYSTEM

Connector No.	B1
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4



Terminal No.	Color Of Wire	Signal Name [Specification]
3	R	-
5	G	-
6	SB	-
7	V	-
8	L	-
11	V	-
12	SB	-
13	LG	-
14	GR	-
15	LG	-
16	R	-
17	W	-
18	SB	-
20	BR	-
21	SHIELD	-
22	Y	-
24	P	-
25	G	-
26	Y	-
27	BR	- [With NAVI]
28	R	- [Without NAVI]
28	W	- [With NAVI]
28	L	- [Without NAVI]
29	W	- [With NAVI]
30	SHIELD	- [With round jaw marker]
31	SHIELD	- [Without round jaw marker]
32	P	- [With NAVI] [Without Blind Spot Warning]
32	Y	- [Without NAVI] [Without Blind Spot Warning]
32	Y	- [With NAVI] [With Blind Spot Warning]
33	SB	-
34	L	-
35	P	-

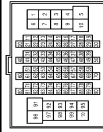
36	L	-
37	P	-
38	P	-
39	Y	-
40	SB	-
44	Y	-
45	GR	-
46	LG	-
47	SB	-
48	BG	-
49	R	-
50	L	-
60	P	-
62	SHIELD	-
63	R	-
64	G	-
65	SHIELD	-
66	W	-
67	V	-
68	SB	-
69	SHIELD	-
70	W	-
73	SB	-
74	L	-
75	W	-
76	BR	-
77	R	-
78	P	-
79	GR	-
83	BG	-
85	V	-
86	LG	-
87	Y	-
88	R	-
89	B	-
90	BG	-
91	G	-
92	BR	-
93	G	-
94	SB	-
95	G	-
96	Y	-
98	W	-
99	GR	-

Connector No.	B68
Connector Name	WIRE TO WIRE
Connector Type	RH08MB



Terminal No.	Color Of Wire	Signal Name [Specification]
1	G	-
2	B	-
3	SB	-
4	R	- [With NAVI]
4	W	- [Without NAVI]
5	Y	-
6	B	-
6	BR	- [With NAVI]
6	BR	- [Without NAVI]
7	L	-
7	W	- [With NAVI]
8	G	-

Connector No.	B201
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4



Terminal No.	Color Of Wire	Signal Name [Specification]
1	R	-
2	R	-
3	GR	-
4	GR	-
7	LG	-
10	W	-
15	SB	-
16	V	-

17	BR	-
18	GR	-
19	P	-
26	BR	-
27	L	-
28	Y	-
29	Y	-
30	GR	-
31	R	-
32	BR	-
33	G	-
51	R	-
55	G	-
56	R	-
57	W	-
58	B	-
59	SHIELD	-
60	LG	-
61	W	-
62	BR	-
63	P	-
64	L	-
65	G	-
66	P	-
67	L	-
68	SHIELD	-
69	Y	-
70	V	-
71	SB	-
72	W	-
73	BR	-
75	Y	-
80	V	-
81	SB	-
82	LG	-
83	P	-
84	R	-
85	L	-
86	BG	-
87	L	-
88	P	-
89	V	-
92	R	-
94	R	-
95	SB	-
96	G	-
97	G	-
98	R	-
99	P	-

SONAR SYSTEM

< WIRING DIAGRAM >

SONAR SYSTEM			
100	L		-
Connector No.	B234	BUZZER(BACKWARD)	
Connector Name	RH02FBR		
Connector Type			
Terminal No.	Color Of Wire	Signal Name [Specification]	
1	P	-	
2	GR	-	
Connector No.	B255	WIRE TO WIRE	
Connector Name	RH08FB		
Connector Type			
Terminal No.	Color Of Wire	Signal Name [Specification]	
1	G	-	
2	B	-	
3	V	-	
4	W	-	
5	G	-	
6	R	-	
7	B	-	
8	BG	-	

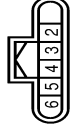
Connector No.	B262	CENTER SENSOR (RR)
Connector Name	RH03FB	
Connector Type		



Connector No.	B264	CENTER SENSOR (RL)
Connector Name	RH03FB	
Connector Type		



Connector No.	B331	JOINT CONNECTOR (BUMP-SUB)
Connector Name	RH08FB	
Connector Type		



Terminal No.	Color Of Wire	Signal Name [Specification]
1	B	-
2	R	-

Terminal No.	Color Of Wire	Signal Name [Specification]
1	B	-
2	BG	-

Terminal No.	Color Of Wire	Signal Name [Specification]
2	B	-
3	B	-
4	B	-
5	B	-
6	B	-

Connector No.	B263	CORNER SENSOR (RL)
Connector Name	RH03FB	
Connector Type		



Connector No.	B265	CENTER SENSOR (RR)
Connector Name	RH03FB	
Connector Type		



Connector No.	E81	WIRE TO WIRE
Connector Name	RS02MB	
Connector Type		



Terminal No.	Color Of Wire	Signal Name [Specification]
1	B	-
2	W	-

Terminal No.	Color Of Wire	Signal Name [Specification]
1	B	-
2	G	-

Terminal No.	Color Of Wire	Signal Name [Specification]
1	G	-
2	B	-
3	V	-
4	W	-
5	G	-
6	R	-
7	B	-
8	BG	-

Terminal No.	Color Of Wire	Signal Name [Specification]
1	R	-
2	G	- [With NAV]
2	L	- [Without NAV]

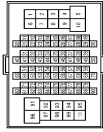
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SONAR SYSTEM

< WIRING DIAGRAM >

SONAR SYSTEM

Connector No.	E106
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4



Terminal No.	Color Of Wire	Signal Name [Specification]
1	RE	-
2	W	-
3	B	-
4	GR	-
5	GR	-
6	G	-
7	L	-
8	Y	-
9	BR	-
10	BG	-
11	SB	-
12	BG	-
13	L	-
14	B	-
15	P	-
16	V	-
17	SB	-
18	V	-
20	BG	-
21	L	-
22	V	-
23	G	-
24	P	-
25	Y	-
26	V	-
27	W	-
28	G	-
29	LG	-
30	W	-
33	B	-
34	R	-
35	G	-
36	SHIELD	-
37	V	-
38	BR	-
39	BG	-

41	W	-
42	G	-
43	BR	-
44	W	-
45	W	-
46	L	-
49	L	-
50	P	-
51	L	-
54	BG	-
57	BR	-
59	W	-
60	LG	-
61	G	-
62	SB	-
63	W	-
64	B	-
65	G	-
66	R	-
67	SHIELD	-
68	Y	-
69	LG	-
70	W	-
71	R	-
72	Y	-
73	B	-
74	BR	-
74	L	-
75	G	-
76	W	-
76	W	-
76	Y	-
77	P	-
77	R	-
78	BR	-
78	L	-
79	L	-
79	Y	-
80	SB	-
81	R	-
82	SB	-
83	BG	-
84	G	-
85	L	-
86	P	-
87	V	-
88	GR	-
90	SHIELD	-
91	W	-
92	Y	-
93	V	-
94	LG	-

95	BG	-
96	P	-
97	R	-
98	SHIELD	-
99	L	-
100	P	-

Connector No.	E124
Connector Name	WIRE TO WIRE
Connector Type	TH80MB



Terminal No.	Color Of Wire	Signal Name [Specification]
3	L	-
4	W	-
5	G	-
6	R	-

Connector No.	E125
Connector Name	CORNER SENSOR (FL)
Connector Type	TH80FEB



Terminal No.	Color Of Wire	Signal Name [Specification]
1	B	-
2	W	-

Connector No.	E147
Connector Name	CORNER SENSOR (FR)
Connector Type	TH80FEB



Terminal No.	Color Of Wire	Signal Name [Specification]
1	BR	-
2	R	-

Connector No.	E148
Connector Name	CENTER SENSOR (FL)
Connector Type	TH80FEB



Terminal No.	Color Of Wire	Signal Name [Specification]
1	B	-
2	BG	-

JRNWE9998GB

A
B
C
D
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F
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SN

SONAR SYSTEM

Connector No.	E148
Connector Name	CENTER SENSOR (FR)
Connector Type	RM03FB



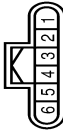
Connector No.	E151
Connector Name	WIRE TO WIRE
Connector Type	RS02FB



20	B	-
21	R	-
22	G	-
23	SHIELD	-
24	B	-
25	R	-
26	G	- [Without BOSE system]
27	P	- [With BOSE system]
28	SHIELD	-
29	G	-
30	L	- [With NAVI]
31	L	- [Without NAVI]

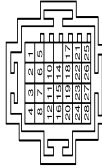
Terminal No.	Color Of Wire	Signal Name [Specification]
1	B	-
2	G	-

Connector No.	E150
Connector Name	WIRE TO WIRE
Connector Type	RM06FB



Terminal No.	Color Of Wire	Signal Name [Specification]
1	R	-
2	B	-

Connector No.	E253
Connector Name	JOINT CONNECTOR-E02
Connector Type	SGA28FBR-J



Terminal No.	Color Of Wire	Signal Name [Specification]
3	G	-
4	B	-
5	BG	-
6	B	-

Terminal No.	Color Of Wire	Signal Name [Specification]
1	W	-
2	R	-
3	G	-
4	Y	-
5	P	-
6	L	-
7	G	-
8	Y	-
9	L	-
10	G	-
11	G	-
12	W	-
13	G	-
14	P	-
15	SHIELD	-
16	R	-
17	W	-
18	G	-
19	GR	-

Connector No.	F103
Connector Name	WIRE TO WIRE
Connector Type	TK38FW-NS10



Terminal No.	Color Of Wire	Signal Name [Specification]
2	G	-
3	W	-
4	R	-
5	B	-
6	Y	-
7	GR	-
8	GR	-
9	O	- [Without ICC]
10	O	- [With ICC]
11	Y	-
12	B	-
13	LG	-
14	R	-
15	GR	-
16	B	-
17	P	-
18	Y	-
19	G	-
20	W	-
21	GR	-
22	GR	-
23	B	-
24	P	-
25	Y	-
26	G	-
27	GR	-
28	GR	-
29	GR	-
30	GR	-
31	GR	-
32	GR	-
33	GR	-
34	GR	-
35	GR	-
36	P	-
37	Y	-
38	G	-
39	LG	-
40	O	-
41	O	-
42	Y	-
43	Y	-
44	Y	-
45	Y	-
46	V	-

Connector No.	F51
Connector Name	A/T ASSEMBLY
Connector Type	FK19FG-DGY



Terminal No.	Color Of Wire	Signal Name [Specification]
1	Y	IGNITION POWER SUPPLY
2	BR	BATTERY POWER SUPPLY
3	O	CAN-H
4	V	K-LINE
5	B	GROUND
6	Y	IGNITION POWER SUPPLY
7	R	BACK-UP LAMP RELAY
8	LG	CAN-L
9	GR	STARTER RELAY
10	B	GROUND

SONAR SYSTEM

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SONAR SYSTEM

Connector No.	F301
Connector Name	TCM
Connector Type	SP10FG



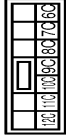
Terminal No.	Color Of Wire	Signal Name [Specification]
1	W	IGNITION POWER SUPPLY
2	-	BATTERY POWER SUPPLY
3	-	CAN-H
4	-	K-LINE
5	-	GROUND
6	-	IGNITION POWER SUPPLY
7	-	BACK-UP LAMP RELAY
8	-	CAN-L
9	-	STARTER RELAY
10	-	GROUND

Connector No.	M1
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS6FW-M2



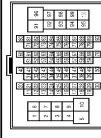
Terminal No.	Color Of Wire	Signal Name [Specification]
1A	Y	-
2A	G	-
3A	L	-
4A	R	-
5A	V	-
6A	Y	-
7A	R	-
8A	L	-

Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS1ZFW-GS



Terminal No.	Color Of Wire	Signal Name [Specification]
10C	L	-
11C	R	-
12C	BG	-
6C	R	-
7C	B	-
8C	G	-
9C	BG	-

Connector No.	M6
Connector Name	WIRE TO WIRE
Connector Type	TH80MM-CS (E-TM4)



Terminal No.	Color Of Wire	Signal Name [Specification]
1	W	- [With NAVI]
2	Y	- [Without NAVI]
3	B	- [Without NAVI]
4	R	- [With NAVI]
5	G	- [Without NAVI]
6	Y	-
7	R	-
8	W	-
9	BR	-
10	R	-

11	BR	-
12	BG	-
13	L	-
14	R	-
15	P	-
16	V	-
17	SB	-
18	V	-
20	BG	-
21	L	-
22	W	-
23	P	-
24	BR	-
25	V	-
26	Y	-
27	G	-
28	G	-
31	L	-
32	G	-
33	B	-
34	W	-
35	R	-
36	SHIELD	-
37	V	-
38	BG	-
39	BR	-
41	W	-
42	BG	-
43	BG	-
45	W	-
49	L	-
50	P	-
51	BR	-
54	Y	-
57	G	-
59	W	-
60	L	-
61	G	-
62	SB	-
63	G	-
64	B	-
66	R	-
67	SHIELD	-
68	Y	-
69	GR	-
70	LG	-
71	LG	-
72	Y	-
73	SB	-

74	BR	- [With ICG]
74	G	- [Without ICG]
75	G	-
76	GR	- [With ICG]
76	W	- [Without ICG]
77	P	-
77	R	- [With ICG]
78	L	-
78	R	- [Without ICG]
79	W	- [Without ICG]
79	Y	- [With ICG]
80	SB	-
81	SB	-
82	Y	-
83	Y	-
84	G	-
85	L	-
86	P	-
87	W	-
89	GR	-
90	SHIELD	-
91	W	-
92	Y	-
93	BR	-
94	P	-
95	GR	-
96	W	-
97	L	-
98	SHIELD	-
99	V	-
100	SB	-

Connector No.	M7
Connector Name	WIRE TO WIRE
Connector Type	TH80MM-CS (E-TM4)



Terminal No.	Color Of Wire	Signal Name [Specification]
3	SB	- [With automatic drive positioner]
3	W	- [Without automatic drive positioner]
5	G	-

A
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SN
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P

SONAR SYSTEM

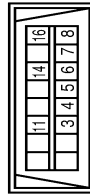
< WIRING DIAGRAM >

SONAR SYSTEM

6	BG	-
7	B	-
8	B	-
11	V	-
12	SB	-
13	LG	-
14	Y	-
15	G	-
16	R	-
17	W	-
18	SB	-
19	LG	-
20	SHIELD	-
21	SHIELD	-
22	V	-
24	Y	-
25	G	-
26	Y	-
27	B	- [With NAVI]
27	R	- [Without NAVI]
28	W	-
29	B	- [Without NAVI]
29	R	- [With NAVI]
30	SHIELD	-
31	L	-
32	P	-
32	Y	- [Without Blind Spot Warning]
32	Y	- [With Blind Spot Warning]
33	SB	-
34	L	-
35	P	-
36	L	-
37	P	-
38	P	-
39	Y	-
40	SB	-
44	L	-
45	GR	-
46	LG	-
47	SB	-
48	BG	-
49	R	-
50	L	-
60	P	-
61	L	-
62	SHIELD	-
63	R	-
64	G	-
65	SHIELD	-
66	SB	-
67	V	-

68	LG	-
68	SHIELD	-
70	W	-
73	G	-
74	R	-
75	W	-
76	W	-
77	B	-
78	P	-
79	GR	-
83	BG	-
85	LG	-
86	R	-
87	Y	-
88	W	-
89	BR	-
90	BG	-
91	G	-
92	V	-
93	BR	-
94	V	-
95	G	-
96	Y	-
98	W	-
99	R	-

Connector No.	M24
Connector Name	DATA LINK CONNECTOR
Connector Type	BD1EFW



Terminal No.	Color Of Wire	Signal Name [Specification]
3	LG	-
4	B	-
5	B	-
6	L	-
7	V	-
8	G	-
11	SB	-
14	P	-
16	Y	-

Connector No.	M66
Connector Name	UNITED METER AND A/C AMP.
Connector Type	TH49FW-NH



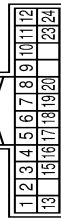
Terminal No.	Color Of Wire	Signal Name [Specification]
5	L	MANUAL MODE SHIFT UP SIGNAL
7	GR	COMMUNICATION SIGNAL (AMP->METER)
8	L	VEHICLE SPEED SIGNAL (2-PULSE)
9	SB	SEAT BELT BUCKLE SWITCH SIGNAL (DRIVER SIDE)
10	W	MANUAL MODE SIGNAL
11	G	NON-MANUAL MODE SIGNAL
14	BR	COMMUNICATION SIGNAL (LCD->AMP)
20	L	ION ON/OFF SIGNAL
23	Y	AT SNOW SWITCH SIGNAL
25	V	MANUAL MODE SHIFT DOWN SIGNAL
27	LG	COMMUNICATION SIGNAL (METER->AMP)
28	R	VEHICLE SPEED SIGNAL (3-PULSE)
30	Y	VEHICLE SPEED SIGNAL (4-PULSE)
33	Y	COMMUNICATION SIGNAL (AMP->LCD)
38	P	BLOWER MOTOR CONTROL SIGNAL

Connector No.	M69
Connector Name	BACK-UP LAMP RELAY
Connector Type	MS02PL-MP-LC



Terminal No.	Color Of Wire	Signal Name [Specification]
1	L	-
2	W	-
3	R	-
5	BG	-

Connector No.	M81
Connector Name	SONAR CONTROL UNIT
Connector Type	TH24FW-NH



Terminal No.	Color Of Wire	Signal Name [Specification]
1	W	IGNITION SIGNAL
2	R	SONAR SYSTEM OFF SWITCH SIGNAL
3	L	CORNER SENSOR SIGNAL FRONT LH
4	Y	CORNER SENSOR SIGNAL FRONT RH
5	W	CORNER SENSOR SIGNAL REAR LH
6	B	CORNER SENSOR SIGNAL REAR RH
7	G	CENTER SENSOR SIGNAL FRONT LH
8	Y	CENTER SENSOR SIGNAL FRONT RH
9	R	CENTER SENSOR SIGNAL FRONT LH
10	W	CENTER SENSOR SIGNAL FRONT RH
11	SB	SONAR SYSTEM OFF SWITCH INDICATOR SIGNAL
12	B	SENSOR GROUND
13	V	VEHICLE SPEED SIGNAL (2-PULSE)
15	G	VEHICLE SPEED SIGNAL
16	BR	REVERSE RANGE SIGNAL
17	BR	K-LINE (CONSULT)
18	V	AV COMM (H)
19	G	AV COMM (L)
20	R	BUZZER DRIVE SIGNAL
23	GR	GROUND
24	B	GROUND

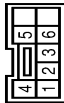
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SONAR SYSTEM

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SONAR SYSTEM

Connector No.	M122
Connector Name	SONAR CANCEL SWITCH
Connector Type	TH08FW



Terminal No.	Color Of Wire	Signal Name [Specification]
1	R	-
2	BG	-
3	V	-
4	L	-
5	W	-
6	SB	-

Connector No.	M116
Connector Name	WIRE TO WIRE
Connector Type	TC46MM-NS10



Terminal No.	Color Of Wire	Signal Name [Specification]
2	P	-
3	L	-
4	R	-
5	B	-
6	R	-
10	BG	-
20	Y	-
28	B	-
29	LG	-
31	W	-
33	B	-
34	B	-
35	L	-

36	P	-
37	Y	-
38	G	-
43	P	-
44	L	-
45	BR	-
46	BG	-

Connector No.	M117
Connector Name	WIRE TO WIRE
Connector Type	TH85MM-GS16-TM4



Terminal No.	Color Of Wire	Signal Name [Specification]
1	L	-
2	G	-
3	GR	-
4	SB	-
7	W	-
10	W	-
15	SB	-
16	V	-
17	BR	-
18	GR	-
19	W	-
26	BR	-
27	LG	-
28	Y	-
29	Y	-
30	V	-
31	R	-
32	BR	-
33	G	-
55	W	-
56	B	-
57	R	-
58	G	-
59	SHIELD	-
60	V	-
61	LG	-

62	BR	-
63	L	-
64	LG	-
65	B	-
66	R	-
67	W	-
68	SHIELD	-
69	V	-
70	Y	-
71	SB	-
72	W	-
73	G	-
75	W	-
80	V	-
81	SB	-
82	V	-
83	P	-
84	R	-
85	L	-
86	BG	-
87	L	-
88	P	-
91	V	-
92	G	-
94	G	-
95	W	-
96	Q	-
98	BR	-
99	P	-
99	V	-
100	L	-
100	SB	-

Connector No.	M122
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40PB-NH



Terminal	Color Of Wire	Signal Name [Specification]
72	R	ROOM ANT2 -
73	G	ROOM ANT2 +
74	SB	PASSENGER DOOR ANT-
75	GR	PASSENGER DOOR ANT+
76	V	DRIVER DOOR ANT-
77	LG	DRIVER DOOR ANT+
78	Y	ROOM ANT1-
79	BR	ROOM ANT1+
80	GR	NATS ANT AMP.
81	W	NATS ANT AMP.
82	R	DOF RELAY (P/B) CONT.
83	V	KEYLESS ENTRY REQUEST SW
87	BR	COMBI SW INPUT 5
88	V	COMBI SW INPUT 3
90	P	CAN-L
91	L	CAN-H
92	LG	KEY SLOT ILL CONT
93	V	ON IND
94	Y	PUDDLE LAMP CONT
95	BG	ACC RELAY CONT
96	GR	A/T SHIFT SELECTOR POWER SUPPLY
99	R	SHIFT P
100	G	PASSENGER DOOR REQUEST SW
101	SB	DRIVER DOOR REQUEST SW
102	BG	BLOWER FAN MOTOR RELAY CONT
103	LG	KEYLESS ENTRY REQUEST SW
107	LG	COMBI SW INPUT 1
108	R	COMBI SW INPUT 4
109	Y	COMBI SW INPUT 2
110	G	HAZARD SW

Connector No.	M137
Connector Name	A/T SHIFT SELECTOR
Connector Type	TH12FW-NH



SONAR SYSTEM

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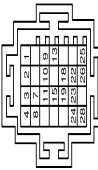
SONAR SYSTEM


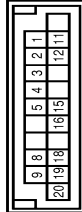
Terminal No.	Color Of Wire	Signal Name [Specification]
1	W	-
2	V	-
3	L	-
4	B	-
5	G	-
7	R	-
8	SB	-
9	B	-
10	GR	-
11	R	-


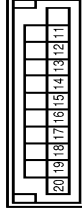
Connector No.	M215
Connector Name	AV CONTROL UNIT
Connector Type	TH424FW-NH



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SONAR SYSTEM			
13	BR	-	
14	BG	-	
16	G	-	
23	B	-	
Connector No.	M358		
Connector Name	JOINT CONNECTOR-M03		
Connector Type	SGA28FDQ7-J		
			
			
Terminal No.	Color Of Wire	Signal Name [Specification]	
1	V	-	
2	R	-	
3	SHIELD	-	
4	BG	-	
7	SHIELD	-	
8	BG	-	
9	V	-	
10	B	-	
11	B	-	
13	V	-	
15	B	-	
18	L	-	
19	B	-	
22	R	-	
23	B	-	
24	BG	-	
25	V	-	
26	L	-	
28	BR	-	

Connector No.	M363		
Connector Name	JOINT CONNECTOR-M11		
Connector Type	NH20FG-DC		
			
			
Terminal No.	Color Of Wire	Signal Name [Specification]	
1	B	-	
2	SHIELD	-	
3	SHIELD	-	
4	B	-	
5	SHIELD	-	
8	B	-	
9	B	-	
11	W	- [With NAVI]	
11	Y	- [Without NAVI]	
12	W	- [With NAVI]	
12	Y	- [Without NAVI]	
15	L	- [Without NAVI]	
15	R	- [With NAVI]	
16	B	- [Without NAVI]	
16	R	- [With NAVI]	
18	B	- [With NAVI]	
18	R	- [Without NAVI]	
19	B	- [With NAVI]	
19	G	- [Without NAVI]	
20	B	-	

Connector No.	M364		
Connector Name	JOINT CONNECTOR-M08		
Connector Type	NH20FW-DC		
			
			
Terminal No.	Color Of Wire	Signal Name [Specification]	
11	B	-	
12	LG	-	
13	LG	-	
14	LG	-	
15	LG	-	
16	G	-	
17	SB	-	
18	SB	-	
19	SB	-	
20	SB	-	

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

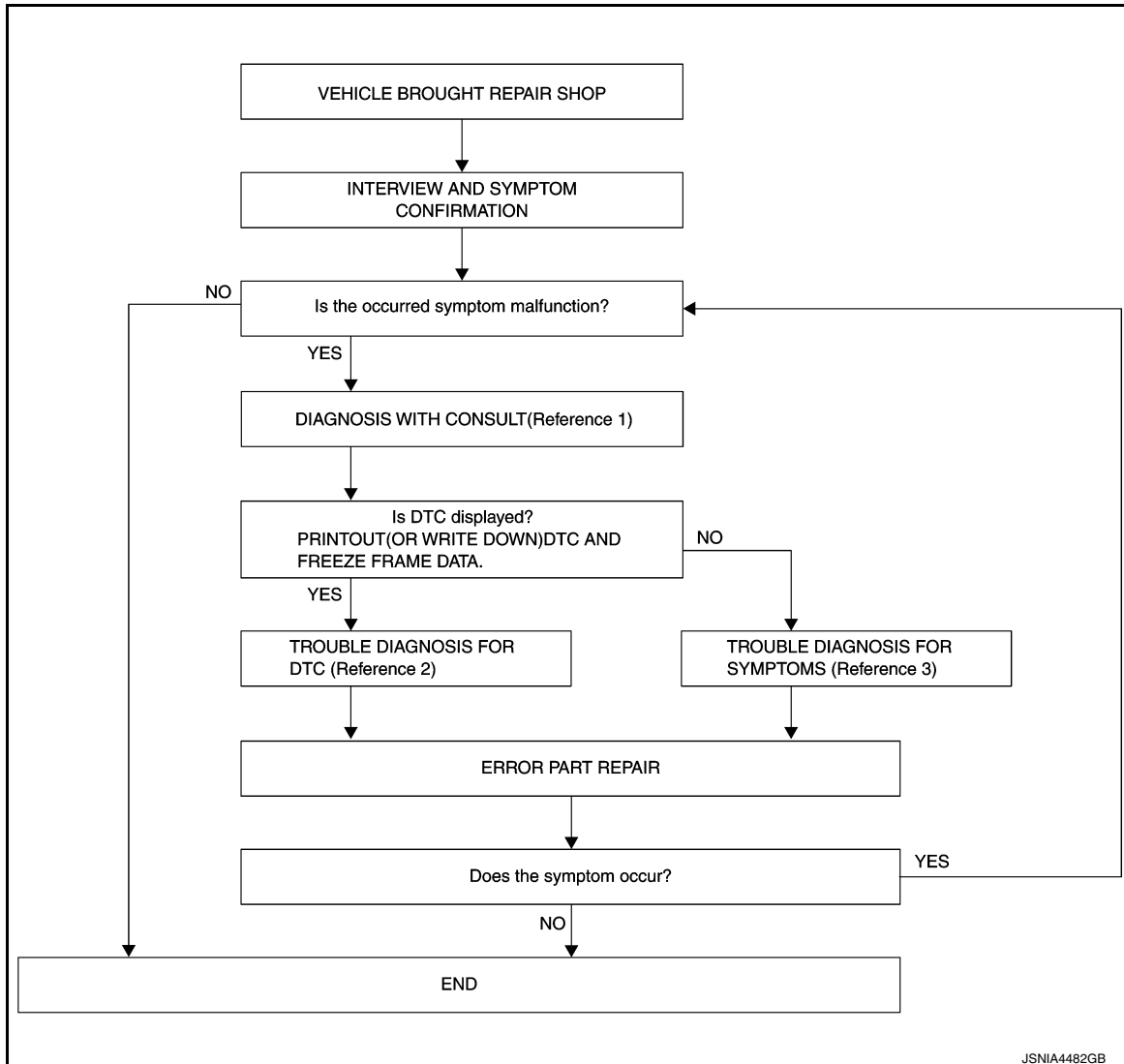
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:000000012759028

OVERALL SEQUENCE



- Reference 1... Refer to [SN-14. "CONSULT Function \(SONAR\)".](#)
- Reference 2... Refer to [SN-22. "DTC Index".](#)
- Reference 3... Refer to [SN-59. "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 if mud, or other foreign objects are not adhering to the sonar sensor.
- Check if there is no deformation, scratches, or other damage to the sonar sensor.
- Check if water has not accumulated in the sonar sensor.
- Check the symptom.

Is the occurred symptom malfunction?

YES >> GO TO 2.

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

NO >> INSPECTION END

2. DIAGNOSIS WITH CONSULT

1. Connect CONSULT and perform a self-diagnosis for "SONAR". Refer to [SN-14, "CONSULT Function \(SONAR\)"](#).

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-Diagnostic Results".

2. Perform the relevant diagnosis referring to the DTC Index. Refer to [SN-22, "DTC Index"](#).

>> GO TO 5.

4. TROUBLE DIAGNOSIS FOR SYMPTOMS

Perform the relevant diagnosis referring to the diagnosis chart by symptom. Refer to [SN-59, "Symptom Table"](#).

>> GO TO 5.

5. ERROR PART REPAIR

1. Repair or replace the identified malfunctioning parts.

2. Perform a self-diagnosis for "SONAR" with CONSULT.

3. Check that the symptom does not occur.

Does the symptom occur?

YES >> GO TO 1.

NO >> INSPECTION END

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B2700 CORNER SENSOR [FL]

< DTC/CIRCUIT DIAGNOSIS >

DTC/CIRCUIT DIAGNOSIS

B2700 CORNER SENSOR [FL]

Description

INFOID:0000000012759034

Component	Description
CORNER/CENTER SENSOR	The obstacle distance is detected. The signal is transmitted to the sonar control unit.

DTC Logic

INFOID:0000000012759035

DTC DETECTION LOGIC

DTC No.	CONSULT indication	DTC detection condition	Troubleshooting
B2700	CORNER SENSOR [FL] [B2700]	Corner sensor front LH is malfunctioning.	Replace corner sensor front LH

B2701 SENSOR HARNESS OPEN [CR-FL]

< DTC/CIRCUIT DIAGNOSIS >

B2701 SENSOR HARNESS OPEN [CR-FL]

Description

INFOID:0000000012759036

Component	Description
CORNER/CENTER SENSOR	The obstacle distance is detected. The signal is transmitted to the sonar control unit.

DTC Logic

INFOID:0000000012759037

DTC DETECTION LOGIC

DTC No.	CONSULT indication	DTC detection condition	Troubleshooting
B2701	SENSOR HARNESS OPEN [CR-FL] [B2701]	Corner sensor front LH harness circuit is open.	Check corner sensor front LH circuit

Diagnosis Procedure

INFOID:0000000012759038

1.CHECK HARNESS CORNER SENSOR FRONT LH SIGNAL CIRCUIT

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

Sonar control unit		Corner sensor front LH		Continuity
Connector	Terminal	Connector	Terminal	
M81	3	E125	2	Existed

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

Sonar control unit		Ground	Continuity
Connector	Terminal		
M81	3		Not existed

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair harness or connector.

2.CHECK HARNESS CORNER SENSOR FRONT LH GROUND CIRCUIT

Check continuity between sonar control unit harness connector and corner sensor front LH harness connector.

Sonar control unit		Corner sensor front LH		Continuity
Connector	Terminal	Connector	Terminal	
M81	12	E125	1	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair harness or connector.

B2702 CORNER SENSOR [FR]

< DTC/CIRCUIT DIAGNOSIS >

B2702 CORNER SENSOR [FR]

Description

INFOID:0000000012759039

Component	Description
CORNER/CENTER SENSOR	The obstacle distance is detected. The signal is transmitted to the sonar control unit.

DTC Logic

INFOID:0000000012759040

DTC DETECTION LOGIC

DTC No.	CONSULT indication	DTC detection condition	Troubleshooting
B2702	CORNER SENSOR [FR] [B2702]	Corner sensor front RH is malfunctioning.	Replace corner sensor front RH

B2703 SENSOR HARNESS OPEN [CR-FR]

< DTC/CIRCUIT DIAGNOSIS >

B2703 SENSOR HARNESS OPEN [CR-FR]

Description

INFOID:0000000012759041

Component	Description
CORNER/CENTER SENSOR	The obstacle distance is detected. The signal is transmitted to the sonar control unit.

DTC Logic

INFOID:0000000012759042

DTC DETECTION LOGIC

DTC No.	CONSULT indication	DTC detection condition	Troubleshooting
B2703	SENSOR HARNESS OPEN [CR-FR] [B2703]	Corner sensor front RH harness circuit is open.	Check corner sensor front RH circuit

Diagnosis Procedure

INFOID:0000000012759043

1.CHECK HARNESS CORNER SENSOR FRONT RH SIGNAL CIRCUIT

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

Sonar control unit		Corner sensor front RH		Continuity
Connector	Terminal	Connector	Terminal	
M81	4	E147	2	Existed

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

Sonar control unit		Ground	Continuity
Connector	Terminal		
M81	4		Not existed

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair harness or connector.

2.CHECK HARNESS CORNER SENSOR FRONT RH GROUND CIRCUIT

Check continuity between sonar control unit harness connector and corner sensor front RH harness connector.

Sonar control unit		Corner sensor front RH		Continuity
Connector	Terminal	Connector	Terminal	
M81	12	E147	1	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair harness or connector.

B2704 CORNER SENSOR [RL]

< DTC/CIRCUIT DIAGNOSIS >

B2704 CORNER SENSOR [RL]

Description

INFOID:0000000012759044

Component	Description
CORNER/CENTER SENSOR	The obstacle distance is detected. The signal is transmitted to the sonar control unit.

DTC Logic

INFOID:0000000012759045

DTC DETECTION LOGIC

DTC No.	CONSULT indication	DTC detection condition	Troubleshooting
B2704	CORNER SENSOR [RL] [B2704]	Corner sensor rear LH is malfunctioning.	Replace corner sensor rear LH

B2705 SENSOR HARNESS OPEN [CR-RL]

< DTC/CIRCUIT DIAGNOSIS >

B2705 SENSOR HARNESS OPEN [CR-RL]

Description

INFOID:0000000012759046

Component	Description
CORNER/CENTER SENSOR	The obstacle distance is detected. The signal is transmitted to the sonar control unit.

DTC Logic

INFOID:0000000012759047

DTC DETECTION LOGIC

DTC No.	CONSULT indication	DTC detection condition	Troubleshooting
B2705	SENSOR HARNESS OPEN [CR-RL] [B2705]	Corner sensor rear LH harness circuit is open.	Check corner sensor rear LH circuit

Diagnosis Procedure

INFOID:0000000012759048

1.CHECK HARNESS CORNER SENSOR REAR LH SIGNAL CIRCUIT

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

Sonar control unit		Corner sensor rear LH		Continuity
Connector	Terminal	Connector	Terminal	
M81	5	B263	2	Existed

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

Sonar control unit		Ground	Continuity
Connector	Terminal		
M81	5		Not existed

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair harness or connector.

2.CHECK HARNESS CORNER SENSOR REAR LH GROUND CIRCUIT

Check continuity between sonar control unit harness connector and corner sensor rear LH harness connector.

Sonar control unit		Corner sensor rear LH		Continuity
Connector	Terminal	Connector	Terminal	
M81	12	B263	1	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair harness or connector.

B2706 CORNER SENSOR [RR]

< DTC/CIRCUIT DIAGNOSIS >

B2706 CORNER SENSOR [RR]

Description

INFOID:0000000012759049

Component	Description
CORNER/CENTER SENSOR	The obstacle distance is detected. The signal is transmitted to the sonar control unit.

DTC Logic

INFOID:0000000012759050

DTC DETECTION LOGIC

DTC No.	CONSULT indication	DTC detection condition	Troubleshooting
B2706	CORNER SENSOR [RR] [B2706]	Corner sensor rear RH is malfunctioning.	Replace corner sensor rear RH

B2707 SENSOR HARNESS OPEN [CR-RR]

< DTC/CIRCUIT DIAGNOSIS >

B2707 SENSOR HARNESS OPEN [CR-RR]

Description

INFOID:0000000012759051

Component	Description
CORNER/CENTER SENSOR	The obstacle distance is detected. The signal is transmitted to the sonar control unit.

DTC Logic

INFOID:0000000012759052

DTC DETECTION LOGIC

DTC No.	CONSULT indication	DTC detection condition	Troubleshooting
B2707	SENSOR HARNESS OPEN [CR-RR] [B2707]	Corner sensor rear RH harness circuit is open.	Check corner sensor rear RH circuit

Diagnosis Procedure

INFOID:0000000012759053

1.CHECK HARNESS CORNER SENSOR REAR RH SIGNAL CIRCUIT

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

Sonar control unit		Corner sensor rear RH		Continuity
Connector	Terminal	Connector	Terminal	
M81	6	B262	2	Existed

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

Sonar control unit		Ground	Continuity
Connector	Terminal		
M81	6		Not existed

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair harness or connector.

2.CHECK HARNESS CORNER SENSOR REAR RH GROUND CIRCUIT

Check continuity between sonar control unit harness connector and corner sensor rear RH harness connector.

Sonar control unit		Corner sensor rear RH		Continuity
Connector	Terminal	Connector	Terminal	
M81	12	B262	1	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair harness or connector.

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B2708 CENTER SENSOR [BL]

< DTC/CIRCUIT DIAGNOSIS >

B2708 CENTER SENSOR [BL]

Description

INFOID:0000000012759054

Component	Description
CORNER/CENTER SENSOR	The obstacle distance is detected. The signal is transmitted to the sonar control unit.

DTC Logic

INFOID:0000000012759055

DTC DETECTION LOGIC

DTC No.	CONSULT indication	DTC detection condition	Troubleshooting
B2708	CENTER SENSOR [BL] [B2708]	Center sensor rear LH is malfunctioning.	Replace center sensor rear LH

B2709 SENSOR HARNESS OPEN [CT-BL]

< DTC/CIRCUIT DIAGNOSIS >

B2709 SENSOR HARNESS OPEN [CT-BL]

Description

INFOID:0000000012759056

Component	Description
CORNER/CENTER SENSOR	The obstacle distance is detected. The signal is transmitted to the sonar control unit.

DTC Logic

INFOID:0000000012759057

DTC DETECTION LOGIC

DTC No.	CONSULT indication	DTC detection condition	Troubleshooting
B2709	SENSOR HARNESS OPEN [CT-BL] [B2709]	Center sensor rear LH harness circuit is open.	Check center sensor rear LH circuit

Diagnosis Procedure

INFOID:0000000012759058

1.CHECK HARNESS CENTER SENSOR REAR LH SIGNAL CIRCUIT

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

Sonar control unit		Center sensor rear LH		Continuity
Connector	Terminal	Connector	Terminal	
M81	7	B264	2	Existed

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

Sonar control unit		Ground	Continuity
Connector	Terminal		
M81	7		Not existed

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair harness or connector.

2.CHECK HARNESS CENTER SENSOR REAR LH GROUND CIRCUIT

Check continuity between sonar control unit harness connector and center sensor rear LH harness connector.

Sonar control unit		Center sensor rear LH		Continuity
Connector	Terminal	Connector	Terminal	
M81	12	B264	1	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair harness or connector.

B270A CENTER SENSOR [BR]

< DTC/CIRCUIT DIAGNOSIS >

B270A CENTER SENSOR [BR]

Description

INFOID:0000000012759059

Component	Description
CORNER/CENTER SENSOR	The obstacle distance is detected. The signal is transmitted to the sonar control unit.

DTC Logic

INFOID:0000000012759060

DTC DETECTION LOGIC

DTC No.	CONSULT indication	DTC detection condition	Troubleshooting
B270A	CENTER SENSOR [BR] [B270A]	Center sensor rear RH is malfunctioning.	Replace center sensor rear RH

B270B SENSOR HARNESS OPEN [CT-BR]

< DTC/CIRCUIT DIAGNOSIS >

B270B SENSOR HARNESS OPEN [CT-BR]

Description

INFOID:0000000012759061

Component	Description
CORNER/CENTER SENSOR	The obstacle distance is detected. The signal is transmitted to the sonar control unit.

DTC Logic

INFOID:0000000012759062

DTC DETECTION LOGIC

DTC No.	CONSULT indication	DTC detection condition	Troubleshooting
B270B	SENSOR HARNESS OPEN [CT-BR] [B270B]	Center sensor rear RH harness circuit is open.	Check center sensor rear RH circuit

Diagnosis Procedure

INFOID:0000000012759063

1.CHECK HARNESS CENTER SENSOR REAR RH SIGNAL CIRCUIT

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

Sonar control unit		Center sensor rear RH		Continuity
Connector	Terminal	Connector	Terminal	
M81	8	B265	2	Existed

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

Sonar control unit		Ground	Continuity
Connector	Terminal		
M81	8		Not existed

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair harness or connector.

2.CHECK HARNESS CENTER SENSOR REAR RH GROUND CIRCUIT

Check continuity between sonar control unit harness connector and center sensor rear RH harness connector.

Sonar control unit		Center sensor rear RH		Continuity
Connector	Terminal	Connector	Terminal	
M81	12	B265	1	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair harness or connector.

B270C CENTER SENSOR [FL]

< DTC/CIRCUIT DIAGNOSIS >

B270C CENTER SENSOR [FL]

Description

INFOID:0000000012759064

Component	Description
CORNER/CENTER SENSOR	The obstacle distance is detected. The signal is transmitted to the sonar control unit.

DTC Logic

INFOID:0000000012759065

DTC DETECTION LOGIC

DTC No.	CONSULT indication	DTC detection condition	Troubleshooting
B270C	CENTER SENSOR [FL]	Center sensor front LH is malfunctioning.	Replace center sensor front LH.

B270D SENSOR HARNESS OPEN [CT-FL]

< DTC/CIRCUIT DIAGNOSIS >

B270D SENSOR HARNESS OPEN [CT-FL]

Description

INFOID:0000000012759066

Component	Description
CORNER/CENTER SENSOR	The obstacle distance is detected. The signal is transmitted to the sonar control unit.

DTC Logic

INFOID:0000000012759067

DTC DETECTION LOGIC

DTC No.	CONSULT indication	DTC detection condition	Troubleshooting
B270D	SEN HARNESS OPEN [CT-FL]	Center sensor front LH harness circuit is open.	Check center sensor front LH circuit.

Diagnosis Procedure

INFOID:0000000012759068

1. CHECK HARNESS CENTER SENSOR FRONT LH SIGNAL CIRCUIT

- Turn ignition switch OFF.
- Disconnect sonar control unit connector and center sensor front LH connector.
- Check continuity between sonar control unit harness connector and center sensor front LH harness connector.

Sonar control unit		Center sensor front LH		Continuity
Connector	Terminal	Connector	Terminal	
M81	9	E148	2	Existed

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

Sonar control unit		Ground	Continuity
Connector	Terminal		
M81	9		Not existed

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair harness or connector.

2. CHECK HARNESS CENTER SENSOR FRONT LH GROUND CIRCUIT

Check continuity between sonar control unit harness connector and center sensor front LH harness connector.

Sonar control unit		Center sensor front LH		Continuity
Connector	Terminal	Connector	Terminal	
M81	12	E148	1	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair harness or connector.

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B270E CENTER SENSOR [FR]

< DTC/CIRCUIT DIAGNOSIS >

B270E CENTER SENSOR [FR]

Description

INFOID:0000000012759069

Component	Description
CORNER/CENTER SENSOR	The obstacle distance is detected. The signal is transmitted to the sonar control unit.

DTC Logic

INFOID:0000000012759070

DTC DETECTION LOGIC

DTC No.	CONSULT indication	DTC detection condition	Troubleshooting
B270E	CENTER SENSOR [FR]	Center sensor front RH is malfunctioning.	Replace center sensor front RH.

B270F SENSOR HARNESS OPEN [CT-FR]

< DTC/CIRCUIT DIAGNOSIS >

B270F SENSOR HARNESS OPEN [CT-FR]

Description

INFOID:0000000012759071

Component	Description
CORNER/CENTER SENSOR	The obstacle distance is detected. The signal is transmitted to the sonar control unit.

DTC Logic

INFOID:0000000012759072

DTC DETECTION LOGIC

DTC No.	CONSULT indication	DTC detection condition	Troubleshooting
B270F	SEN HARNESS OPEN [CT-FR]	Center sensor front RH harness circuit is open.	Check center sensor front RH circuit.

Diagnosis Procedure

INFOID:0000000012759073

1.CHECK HARNESS CENTER SENSOR FRONT RH SIGNAL CIRCUIT

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

Sonar control unit		Center sensor front RH		Continuity
Connector	Terminal	Connector	Terminal	
M81	10	E149	2	Existed

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

Sonar control unit		Ground	Continuity
Connector	Terminal		
M81	10		Not existed

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair harness or connector.

2.CHECK HARNESS CENTER SENSOR FRONT RH GROUND CIRCUIT

Check continuity between sonar control unit harness connector and center sensor front RH harness connector.

Sonar control unit		Center sensor front RH		Continuity
Connector	Terminal	Connector	Terminal	
M81	12	E149	1	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair harness or connector.

POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

POWER SUPPLY AND GROUND CIRCUIT SONAR CONTROL UNIT

SONAR CONTROL UNIT : Diagnosis Procedure

INFOID:0000000012759074

1.CHECK FUSE

Check for blown fuses.

Power source	Fuse No.
Ignition switch ACC or ON	19
Ignition switch ON or START	3

Is the inspection result normal?

YES >> GO TO 2.

NO >> Be sure to eliminate cause of malfunction before installing new fuse.

2.CHECK POWER SUPPLY CIRCUIT

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

Signal name	Connector No.	Terminal No.	Ignition switch position	Value (Approx.)
ACC power supply	M81	13	ACC	Battery voltage
Ignition signal	M81	1	ON	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace sonar control unit power supply harness.

3.CHECK GROUND CIRCUIT

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

Sonar control unit		Ground	Continuity
Connector	Terminal		
M81	24		Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace sonar control unit ground harness.

P RANGE SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

P RANGE SIGNAL CIRCUIT

Description

INFOID:0000000012759075

The sonar control unit turns the sonar system activation OFF when inputting P range signal.

Component Function Check

INFOID:0000000012759076

1. SONAR CONTROL UNIT DATA MONITOR INSPECTION

Check "P RANGE" with "DATA MONITOR" of "SONAR".

P range

Vehicle condition	Indication
Shift the selector lever to P position	: On
Shift the selector lever other than P position	: Off

>> INSPECTION END

Diagnosis Procedure

INFOID:0000000012759077

1. CHECK P RANGE SIGNAL

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

(+) Sonar control unit		(-)	Condition	Voltage (Approx.)
Connector	Terminal			
M81	16	Ground	Shift position in P position.	0 V
			Other than shift position in P position.	12.0 V

Is the inspection result normal?

- YES >> INSPECTION END
NO >> Repair harness or connector.

R RANGE SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

R RANGE SIGNAL CIRCUIT

Description

INFOID:0000000012759078

The sonar control unit turns the sonar system activation ON when inputting the reverse signal.

Component Function Check

INFOID:0000000012759079

1.SONAR CONTROL UNIT DATA MONITOR INSPECTION

Check "REVERSE RANGE" with "DATA MONITOR" of "SONAR".

R range

Vehicle condition	Indication
Shift the selector lever to R position	: On
Shift the selector lever other than R position	: Off

>> INSPECTION END

Diagnosis Procedure

INFOID:0000000012759080

1.CHECK R RANGE SIGNAL

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

(+) Sonar control unit		(-)	Condition	Voltage (Approx.)
Connector	Terminal			
M81	17	Ground	Shift the selector lever to R position.	12.0 V
			Shift the selector lever other than R position.	0 V

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair harness or connector.

BUZZER CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

BUZZER CIRCUIT

Description

INFOID:0000000012759081

The sonar control unit outputs the buzzer signal when the rear sonar detects the obstacle.

Component Function Check

INFOID:0000000012759082

1.SONAR CONTROL UNIT ACTIVE TEST

1. Select "BUZZER" in "ACTIVE TEST" of "SONAR".
2. Check the buzzer operation.

BUZZER

Test item	Condition
FRONT ON	: FRONT BUZZER ON
REAR ON	: REAR BUZZER ON

>> INSPECTION END

Diagnosis Procedure

INFOID:0000000012759083

1.CHECK BUZZER POWER SUPPLY

1. Turn ignition switch ON.
2. Check voltage between buzzer harness connector and ground.

(+) Buzzer		(-)	Voltage (Approx.)
Connector	Terminal		
B254	1	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair harness or connector.

2.CHECK HARNESS BUZZER SIGNAL CIRCUIT

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

Sonar control unit		Buzzer		Continuity
Connector	Terminal	Connector	Terminal	
M81	23	B254	2	Existed

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

Sonar control unit		Ground	Continuity
Connector	Terminal		
M81	23		Not existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair harness or connector.

3.CHECK SIGNAL SONAR CONTROL UNIT

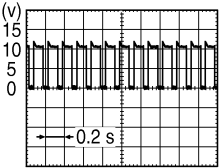
1. Connect sonar control unit connector and buzzer connector.
2. Check signal between sonar control unit harness connector and ground.

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BUZZER CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

(+)		(-)	Condition	Value (Approx.)
Sonar control unit				
Connector	Terminal			
M81	23	Ground	When buzzer operation.	NOTE: Waveform period changes due to the distance to an obstacle. 
			Other than above.	12.0 V

Is the inspection result normal?

YES >> INSPECTION END
 NO >> Replace sonar control unit.

SONAR CANCEL SWITCH CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

SONAR CANCEL SWITCH CIRCUIT

Description

INFOID:0000000012759084

The sonar control unit turns the sonar system activation OFF when inputting the cancel switch signal.

Component Function Check

INFOID:0000000012759085

1. SONAR CONTROL UNIT DATA MONITOR INSPECTION

Check "CANCEL SW" with "DATA MONITOR" of "SONAR".

Cancel switch

Vehicle condition	Indication
While pressing the sonar cancel switch	: On
Other than above	: Off

>> INSPECTION END

Diagnosis Procedure

INFOID:0000000012759086

1. CHECK HARNESS CANCEL SWITCH SIGNAL CIRCUIT

1. Disconnect sonar control unit connector and cancel switch connector.
2. Check continuity between sonar control unit harness connector and cancel switch harness connector.

Sonar control unit		Cancel switch		Continuity
Connector	Terminal	Connector	Terminal	
M81	2	M82	1	Existed

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

Sonar control unit		Ground	Continuity
Connector	Terminal		
M81	2		Not existed

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair harness or connector.

2. CHECK VOLTAGE SONAR CONTROL UNIT

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

(+) (Sonar control unit)		(-)	Voltage (Approx.)
Connector	Terminal		
M81	2	Ground	12.0 V

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace sonar control unit.

3. CHECK CANCEL SWITCH

1. Turn ignition switch OFF.
2. Check sonar cancel switch function. Refer to [SN-57, "Component Function Check"](#).

SONAR CANCEL SWITCH CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

- YES >> GO TO 4.
NO >> Replace cancel switch.

4.CHECK HARNESS CANCEL SWITCH GROUND CIRCUIT

1. Turn ignition switch ON.
2. Check continuity between cancel switch harness connector and ground.

Cancel switch		Ground	Continuity
Connector	Terminal		
M82	3		Existed

Is the inspection result normal?

- YES >> INSPECTION END
NO >> Repair harness or connector.

SONAR SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

SONAR SYSTEM SYMPTOMS

Symptom Table

INFOID:0000000012759092

MODELS WITHOUT NAVIGATION

Symptom	Check item	Diagnosis method
All sonar sensors do not activate.	"SONAR" is indicated on "SELECT SYSTEM" screen after connection CONSULT.	<ul style="list-style-type: none"> Perform "Self Diagnostic Result" of "SONAR" with CONSULT. Refer to SN-14, "CONSULT Function (SONAR)". Check P range signal if the "SONAR" self-diagnosis does not detect any error. Refer to SN-53, "Diagnosis Procedure".
	"SONAR" is not indicated on "SELECT SYSTEM" screen after connection CONSULT.	Check sonar control unit power supply and ground circuit. Refer to SN-52, "SONAR CONTROL UNIT : Diagnosis Procedure" .
Corner sensor (RL, RR) and center sensor (RL, RR) does not activate.	Buzzer sounds when "REAR ON" of "BUZZER" in "ACTIVE TEST" of "SONAR".	Check reverse signal for sonar control unit. Refer to SN-54, "Diagnosis Procedure" .
	Buzzer does not sound when "REAR ON" of "BUZZER" in "ACTIVE TEST" of "SONAR".	Check buzzer signal for sonar control unit. Refer to SN-55, "Diagnosis Procedure" .
Any sonar sensor does not activate.	—	Perform "Self Diagnostic Result" of "SONAR" with CONSULT. Refer to SN-14, "CONSULT Function (SONAR)" .
Sonar indicator is not displayed by display unit. (Buzzer sound is normal)	—	Perform the on board diagnosis of MULTI AV. Refer to AV-152, "On Board Diagnosis Function" .

MODELS WITH NAVIGATION

Symptom	Check item	Diagnosis method
All sonar sensors do not activate.	"SONAR" is indicated on "SELECT SYSTEM" screen after connection CONSULT.	<ul style="list-style-type: none"> Perform "Self Diagnostic Result" of "SONAR" with CONSULT. Refer to SN-14, "CONSULT Function (SONAR)". Check P range signal if the "SONAR" self-diagnosis does not detect any error. Refer to SN-53, "Diagnosis Procedure". Perform the on board diagnosis of MULTI AV. Refer to AV-152, "On Board Diagnosis Function".
	"SONAR" is not indicated on "SELECT SYSTEM" screen after connection CONSULT.	Check sonar control unit power supply and ground circuit. Refer to SN-52, "SONAR CONTROL UNIT : Diagnosis Procedure" .
Corner sensor (RL, RR) and center sensor (RL, RR) does not activate.	—	Check reverse signal for sonar control unit. Refer to SN-54, "Diagnosis Procedure" .
Any sonar sensor does not activate.	—	Perform "Self Diagnostic Result" of "SONAR" with CONSULT. Refer to SN-14, "CONSULT Function (SONAR)" .
Sonar indicator is not displayed by display unit.	—	Perform the on board diagnosis of MULTI AV. Refer to AV-152, "On Board Diagnosis Function" .

NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS >

NORMAL OPERATING CONDITION

Symptom Table

INFOID:0000000012759093

Symptom	Possible cause
Unstable object detection	<ul style="list-style-type: none">• The vehicle is on a rough surface, such as stone or gravel.• When used in poor weather conditions, such as heavy snow/rain or strong wind.• When subjected to an ultrasonic noise generated from exhaust muffler or brakes.• When left standing in the hot sun or in a cold climate.• When the surface of the sensor is frozen or covered with snow/dirt/moisture.• When a retrofitted xenon lamp, lighted license plate, or harness is close to the sensor body or sensor harness.• When subjected to loop coil noises generated from a vehicle detector placed at an intersection or coin parking area.
Object undetectable	<ul style="list-style-type: none">• Air-containing objects, such as cloth, cotton, glass wool, dust, and snow.• Thin objects, such as rope, chain, and wire.• Smooth-faced objects placed in a slanting direction.• Fast-moving small animals.• A corner of an angular object. <p>NOTE: If the sensor detection part is scratched, obstacles cannot be detected.</p>

SONAR CONTROL UNIT

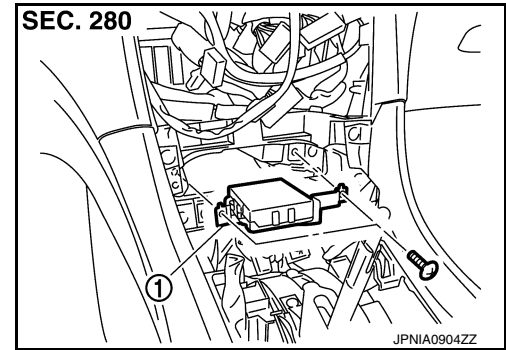
< REMOVAL AND INSTALLATION >

REMOVAL AND INSTALLATION

SONAR CONTROL UNIT

Exploded View

INFOID:0000000012759102



1. Sonar control unit

Removal and Installation

INFOID:0000000012759103

REMOVAL

1. Remove AV control unit.
Refer to [AV-266. "Removal and Installation"](#).
2. Remove screws and connector, and then sonar control unit.

INSTALLATION

Install in the reverse order of removal.

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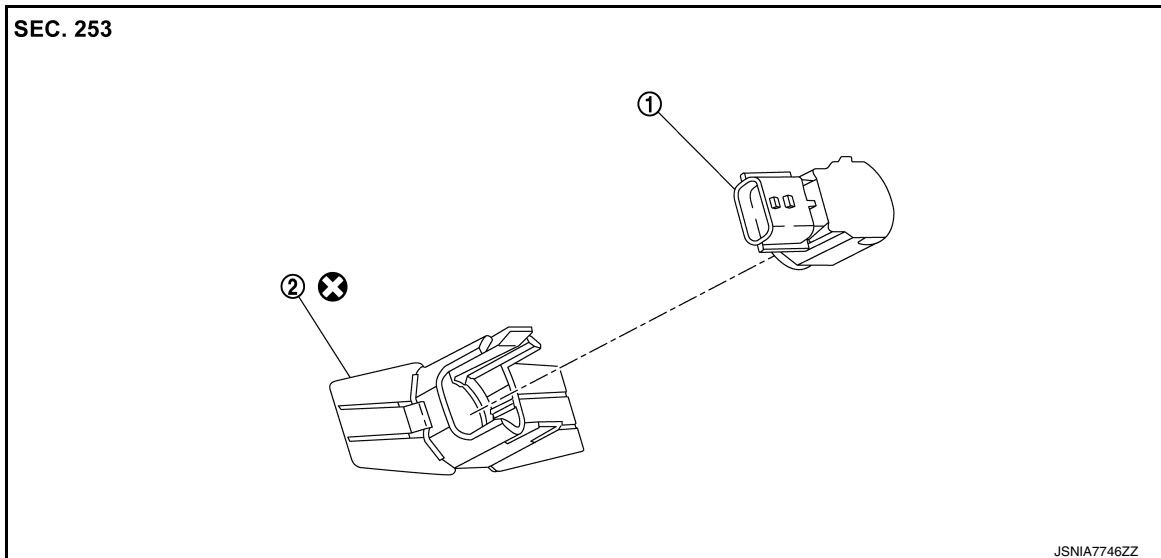
SONAR SENSOR

< REMOVAL AND INSTALLATION >

SONAR SENSOR

Exploded View

INFOID:0000000012779967



- ① Sonar sensor ② Sensor holder
- ⊗ :Always replace after every disassembly.

Removal and Installation

INFOID:0000000012779968

REMOVAL

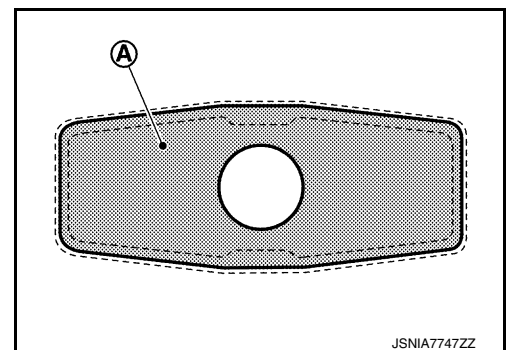
1. Remove front bumper fascia assembly, or rear bumper fascia assembly. Refer to [EXT-13, "Removal and Installation"](#) (front bumper fascia assembly), or [EXT-17, "Removal and Installation"](#) (rear bumper fascia assembly).
2. Disconnect sonar sensor connector.
3. Unhook the pawl to remove sonar sensor.

INSTALLATION

1. Install sonar sensor to sensor holder.
2. Apply primer to sensor mounting part ① of bumper.

CAUTION:

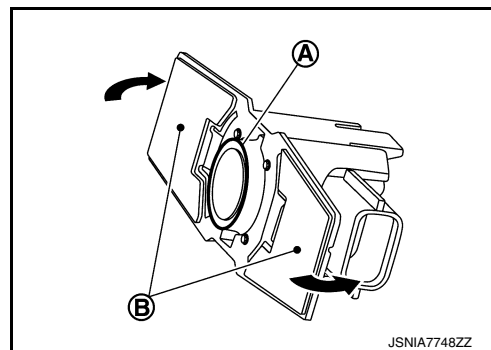
Never apply two coats of primer. Applying two coats or more of primer results in excessively thick film and this may allow the sensor holder to come off from primer under exfoliation.



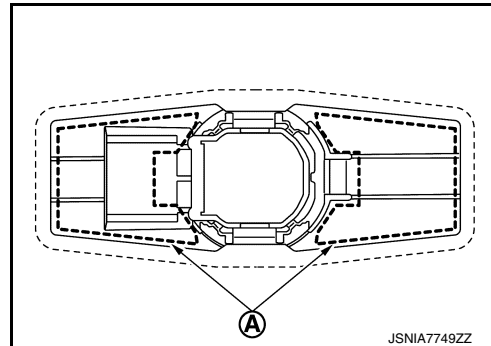
SONAR SENSOR

< REMOVAL AND INSTALLATION >

3. Remove the film of double-sided tape, bend sensor holder in the direction shown by arrow so that double-sided tape ② does not contact bumper, and align portion ① of sonar sensor with the bumper hole.



4. Press portion ① of sensor holder to paste the sensor holder to bumper as shown in the figure.



5. Install connector to sonar sensor.
6. Install front bumper fascia assembly, or rear bumper fascia assembly. Refer to [EXT-13. "Removal and Installation"](#) (front bumper fascia assembly), or [EXT-17. "Removal and Installation"](#) (rear bumper fascia assembly).

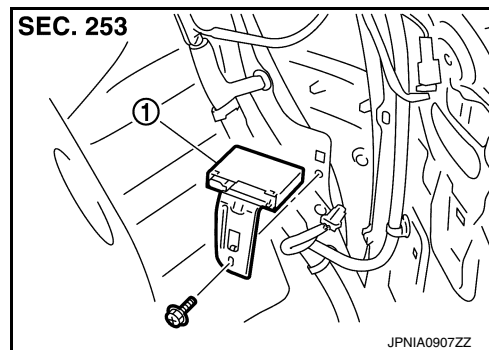
BUZZER (BACKWARD)

< REMOVAL AND INSTALLATION >

BUZZER (BACKWARD)

Exploded View

INFOID:0000000012759108



1. Buzzer (backward)

Removal and Installation

INFOID:0000000012759109

REMOVAL

1. Remove luggage side lower finisher RH. Refer to [INT-34. "Removal and Installation"](#).
2. Remove buzzer (backward) mounting bolt.
3. Remove buzzer (backward).

INSTALLATION

Install in the reverse order of removal.

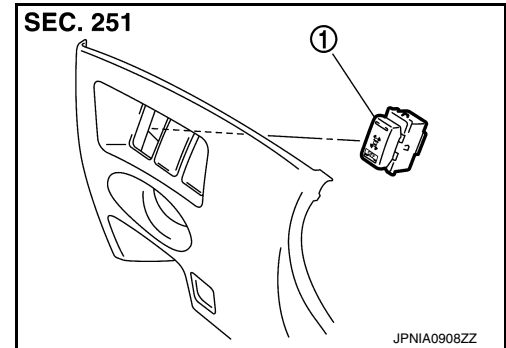
SONAR CANCEL SWITCH

< REMOVAL AND INSTALLATION >

SONAR CANCEL SWITCH

Exploded View

INFOID:0000000012759110



1. Sonar cancel switch

Removal and Installation

INFOID:0000000012759111

REMOVAL

1. Remove instrument lower panel LH. Refer to [IP-13. "Removal and Installation"](#).
2. Widen the pawl. And remove sonar cancel switch.

INSTALLATION

Install in the reverse order of removal.

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