SECTION SN
SONAR SYSTEM

CONTENTS

BASIC INSPECTION 3

DIAGNOSIS AND REPAIR WORKFLOW 3
Work Flow 3

SYSTEM DESCRIPTION 5

SONAR SYSTEM 5
System Diagram 5
System Description 5
Component Parts Location 7
Component Description 7

DIAGNOSIS SYSTEM (SONAR CONTROL UNIT) 8
CONSULT-III Function (SONAR) 8

DTC/CIRCUIT DIAGNOSIS 10

B2704 CORNER SENSOR [RL] 10
Description 10
DTC Logic 10

B2705 SENSOR HARNESS OPEN [CR-RL] 11
Description 11
DTC Logic 11
Diagnosis Procedure 11

B2706 CORNER SENSOR [RR] 12
Description 12
DTC Logic 12

B2707 SENSOR HARNESS OPEN [CR-RR] 13
Description 13
DTC Logic 13
Diagnosis Procedure 13

B2708 CENTER SENSOR [BL] 14
Description 14
DTC Logic 14

B2709 SENSOR HARNESS OPEN [CT-BL] 15
Description 15
DTC Logic 15
Diagnosis Procedure 15

B270A CENTER SENSOR [BR] 16
Description 16
DTC Logic 16

B270B SENSOR HARNESS OPEN [CT-BR] 17
Description 17
DTC Logic 17
Diagnosis Procedure 17

POWER SUPPLY AND GROUND CIRCUIT 18

SONAR CONTROL UNIT 18
SONAR CONTROL UNIT : Diagnosis Procedure 18

R RANGE SIGNAL CIRCUIT 19
Description 19
Diagnosis Procedure 19

BUZZER DRIVE SIGNAL CIRCUIT 20
Description 20
Diagnosis Procedure 20

ECU DIAGNOSIS INFORMATION 21

SONAR CONTROL UNIT 21
Reference Value 21
Wiring Diagram - SONAR SYSTEM - 24
Fail Safe 27
DTC Index 28

SYMPTOM DIAGNOSIS 29

SONAR SYSTEM SYMPTOMS 29
Symptom Table 29

PRECAUTION 30

PRECAUTIONS 30

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER" 30

REMOVAL AND INSTALLATION 31

SONAR CONTROL UNIT 31
Exploded View 31
Removal and Installation 31

SONAR SENSOR 32

CENTER SENSOR 32
CENTER SENSOR : Exploded View 32
CENTER SENSOR : Removal and Installation 32

CORNER SENSOR 32
CORNER SENSOR : Exploded View 32
CORNER SENSOR : Removal and Installation 33

BUZZER 34
Exploded View 34
Removal and Installation 34

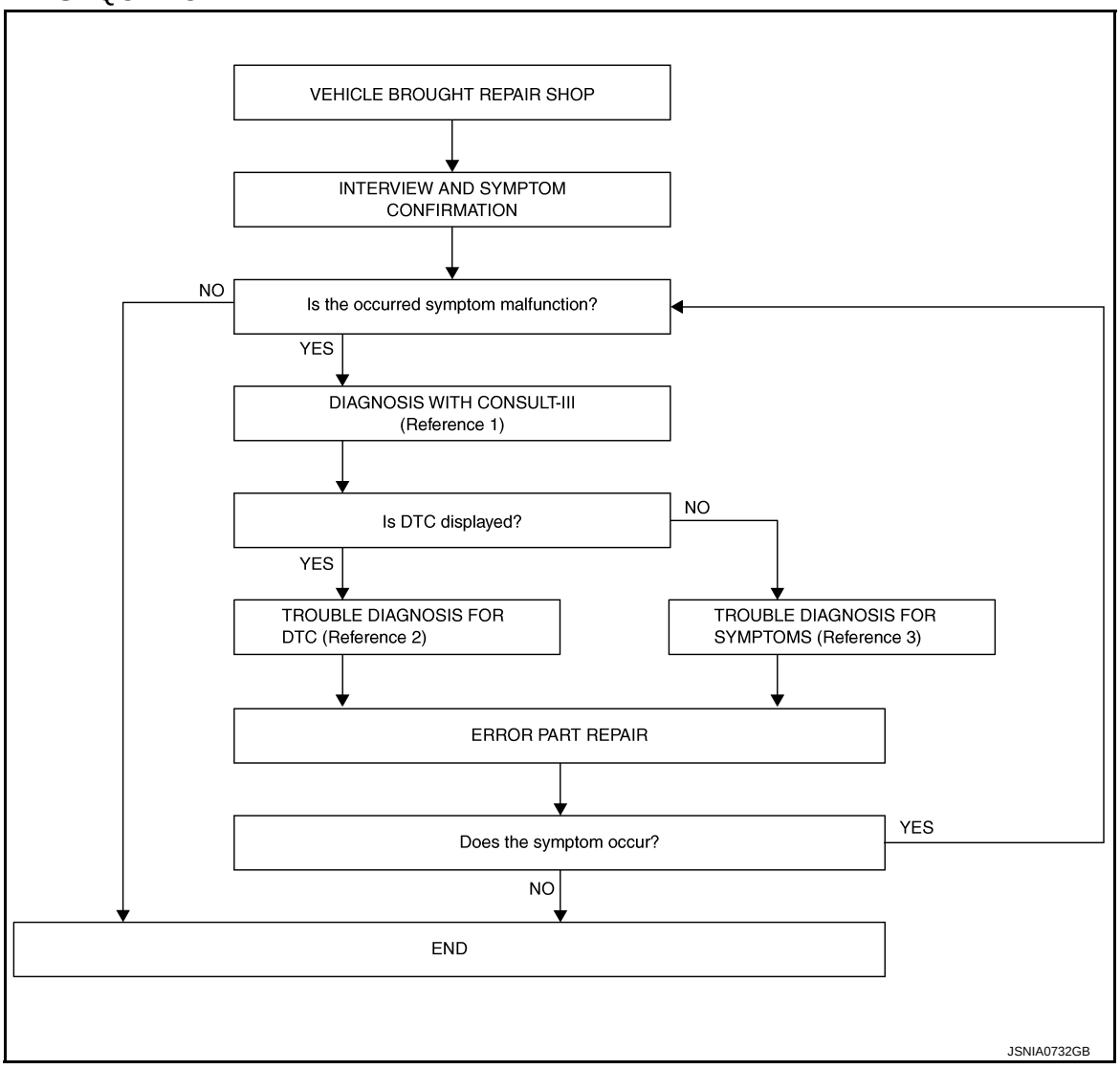
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:0000000004964334

OVERALL SEQUENCE



- Reference 1··· Refer to SN-8, "CONSULT-III Function (SONAR)".
- Reference 2··· Refer to SN-28, "DTC Index".
- Reference 3··· Refer to SN-29, "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.

NO >> INSPECTION END

2.DIAGNOSIS WITH CONSULT-III

1. Connect CONSULT-III and perform a self-diagnosis for “SONAR”. Refer to SN-8, "CONSULT-III Function (SONAR)".
2. Check if any DTC is displayed in the self-diagnosis results.

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-28, "DTC Index".

>> GO TO 5.

4.TROUBLE DIAGNOSIS FOR SYMPTOMS

Perform the relevant diagnosis referring to the diagnosis chart by symptom. Refer to SN-29, "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-III.
3. Check that the symptom does not occur.

Does the symptom occur?

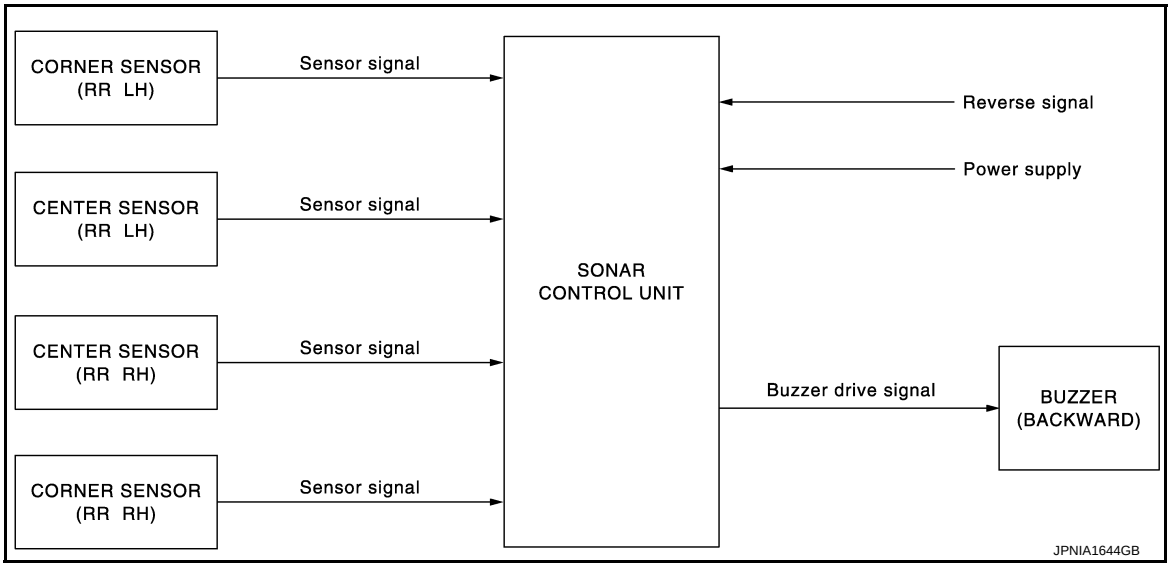
YES >> GO TO 1.
NO >> INSPECTION END

SYSTEM DESCRIPTION

SONAR SYSTEM

System Diagram

INFOID:0000000004964339



System Description

INFOID:0000000004964340

- The sonar sensor installed to the rear bumper detects obstacles around the bumper.
- The distance between a bumper and obstacles is informed to the driver with different frequency of buzzer.

ACTIVATION CONDITION

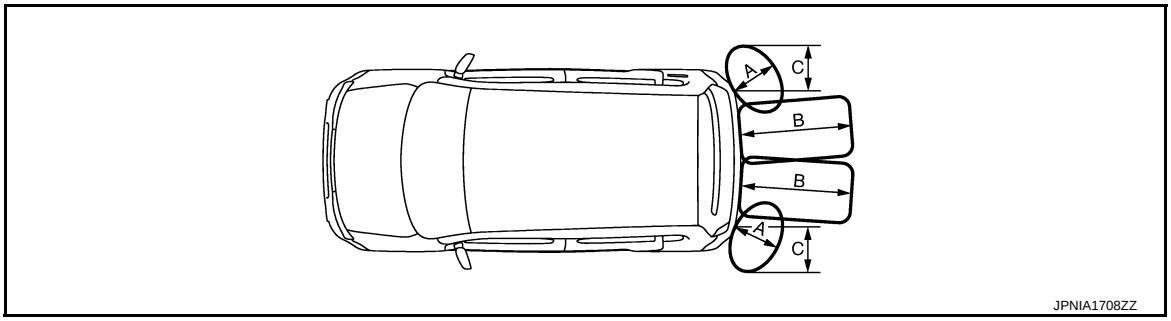
The rear sensor activates and outputs the warning buzzer in the following conditions.

- Reverse signal ON
- Obstacle detection

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 frequency at 3 levels according to the corner sensor detection condition.
- The sonar control unit outputs the warning buzzer frequency at 4 levels according to the center sensor detection condition.
- The detection condition setting is adjustable to 4 levels with CONSULT-III. Refer to SN-8, "CONSULT-III Function (SONAR)".
- CONSULT-III enables the center sensor (rear) not to detect the range of 40 cm (15.7 in) or less to prevent from the trailer hitch vehicles misdetection. Refer to SN-8, "CONSULT-III Function (SONAR)".

Obstacle detection range image



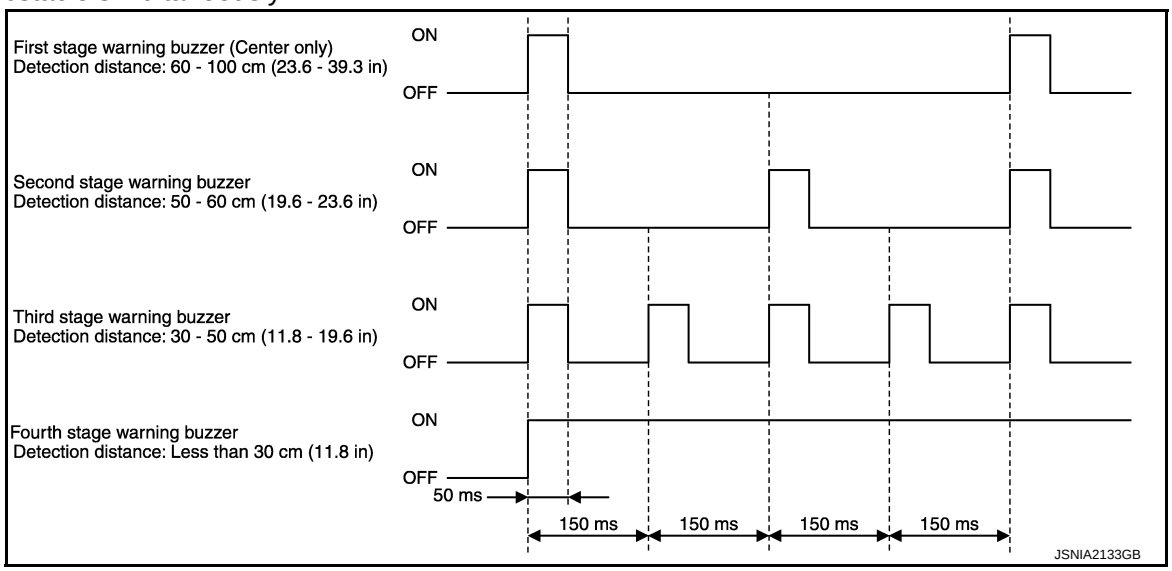
A. Approx. 60 cm (23.6 in) B. Approx. 100 cm (39.3 in) C. Approx. 50 cm (19.6 in)

Detection distance (Default)

Warning item	Corner sensor	Center sensor
First stage warning	—	60 – 100 cm (23.6 – 39.3 in)
Second stage warning	50 – 60 cm (19.6 – 23.6 in)	50 – 60 cm (19.6 – 23.6 in)
Third stage warning	30 – 50 cm (11.8 – 19.6 in)	30 – 50 cm (11.8 – 19.6 in)
Fourth stage warning	Less than 30 cm (11.8 in)	Less than 30 cm (11.8 in)

Warning Buzzer Frequency

- The warning buzzer output frequency changes 4 levels (for center) and 3 levels (for 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.



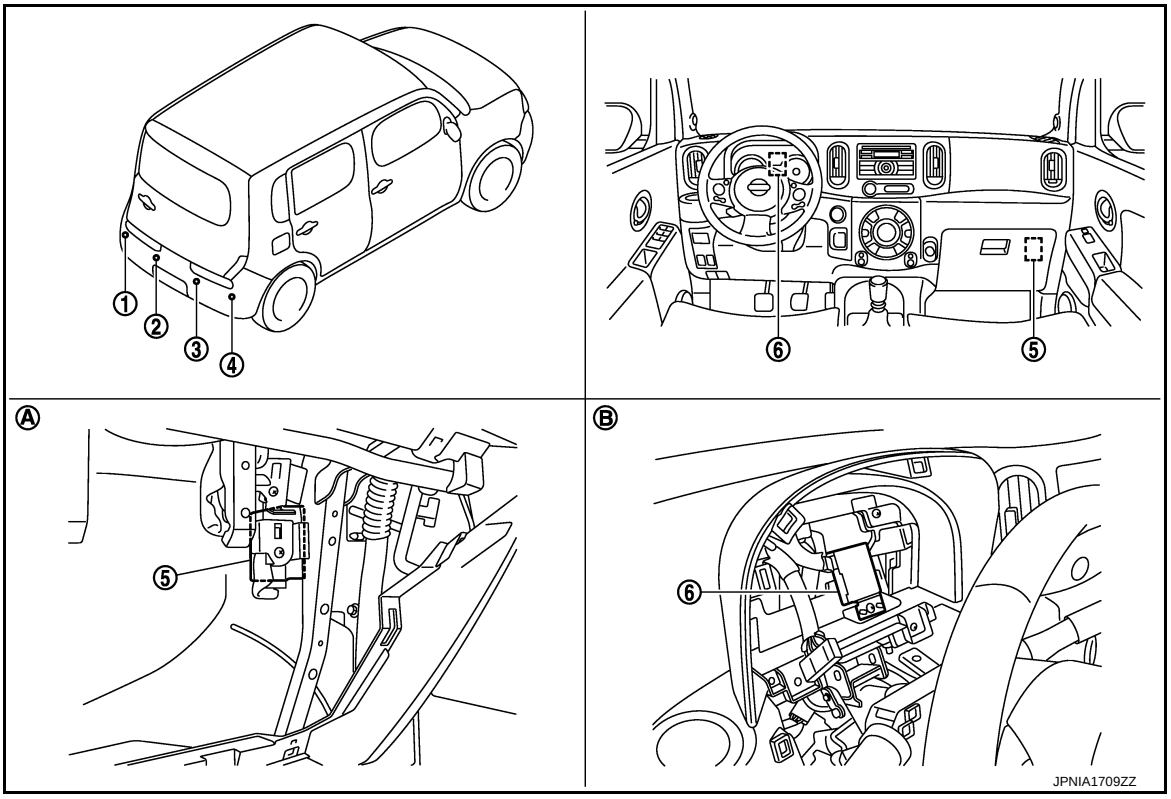
NOTE:

The warning buzzer of the corner sensor sounds as follows.

- As for the first, second, and third stages, the warning buzzer sounds 3 seconds at maximum.
- As for the fourth stage, the warning buzzer does not stop even after a lapse of 3 seconds.

Component Parts Location

INFOID:0000000004964341



1. Corner sensor rear LH
2. Center sensor rear LH
3. Center sensor rear RH
4. Corner sensor rear RH
5. Sonar control unit
6. Buzzer

A. Glove box is removed condition
B. Combination meter is removed condition

Component Description

INFOID:0000000004964342

Component	Description
SONAR CONTROL UNIT	• The warning buzzer outputs by inputting the sensor signal from corner/center sensor. The warning buzzer outputs the separated buzzer. • When reverse signal is input, a power supply is input into sonar control unit.
CORNER/CENTER SENSOR	The obstacle distance is detected. The signal is transmitted to the sonar control unit.
BUZZER	The warning buzzer outputs with the signal from the sonar control unit.

DIAGNOSIS SYSTEM (SONAR CONTROL UNIT)

CONSULT-III Function (SONAR)

INFOID:0000000004964343

DESCRIPTION

CONSULT-III 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.
Work support	Changes setting of each function.
Active Test	Gives a drive signal to a load to check the operation.

ECU PART NUMBER

Displays the part number of the sonar control unit.

SELF-DIAGNOSTIC RESULTS

For details, refer to SN-28, "DTC Index".

DATA MONITOR

Monitor Item	Display	Description
REAR BUZZER	On	Buzzer (backward) output condition.
	Off	Buzzer (backward) non-output condition.
REVERSE RANGE	On	Selector lever in R position.
	Off	Other than selector lever in R position.
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 50 cm (19.6 in) or more and less then 60 cm (23.6 in).
	LV.3	The distance between the corner sensor and an obstacle is 30 cm (11.8 in) or more and less then 50 cm (19.6 in).
	LV.4	The distance between corner sensor and an obstacle less than 30 cm (11.8 in).
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 60 cm (23.6 in) or more and less then 100 cm (39.3 in).
	LV.2	The distance between the center sensor and an obstacle is 50 cm (19.6 in) or more and less then 60 cm (23.6 in).
	LV.3	The distance between the center sensor and an obstacle is 30 cm (11.8 in) or more and less then 50 cm (19.6 in).
	LV.4	The distance between center sensor and an obstacle less than 30 cm (11.8 in).

ACTIVE TEST

Active test item	Function
BUZZER	This test is able to check buzzer (backward) 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.
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	NORMAL	NEAR
Second 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)
Third 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)
Fourth 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)

CENTER SEN DISTANCE SET

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

Warning item	FARTHER	FAR	NORMAL	NEAR
First stage warning	80 – 120 cm (31.4 – 47.2 in)	70 – 110 cm (27.5 – 43.3 in)	60 – 100 cm (23.6 – 39.3 in)	50 – 90 cm (19.6 – 35.4 in)
Second 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)
Third 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)
Fourth 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)

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

DTC/CIRCUIT DIAGNOSIS

B2704 CORNER SENSOR [RL]

Description

INFOID:0000000004964365

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

DTC Logic

INFOID:0000000004964366

DTC DETECTION LOGIC

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

B2705 SENSOR HARNESS OPEN [CR-RL]

Description

INFOID:0000000004964367

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

DTC Logic

INFOID:0000000004964368

DTC DETECTION LOGIC

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

Diagnosis Procedure

INFOID:0000000004964369

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	
M36	5	T6	1	Existed

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

Sonar control unit		Ground	Continuity
Connector	Terminal		
M36	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	
M36	12	T6	2	Existed

Is the inspection result normal?

YES >> Replace sonar control unit.
NO >> Repair harness or connector.

B2706 CORNER SENSOR [RR]

Description

INFOID:0000000004964370

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

DTC Logic

INFOID:0000000004964371

DTC DETECTION LOGIC

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

B2707 SENSOR HARNESS OPEN [CR-RR]

Description

INFOID:0000000004964372

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

DTC Logic

INFOID:0000000004964373

DTC DETECTION LOGIC

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

Diagnosis Procedure

INFOID:0000000004964374

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	
M36	6	T9	1	Existed

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

Sonar control unit		Ground	Continuity
Connector	Terminal		
M36	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	
M36	12	T9	2	Existed

Is the inspection result normal?

YES >> Replace sonar control unit.
NO >> Repair harness or connector.

B2708 CENTER SENSOR [BL]

Description

INFOID:0000000004964375

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

DTC Logic

INFOID:0000000004964376

DTC DETECTION LOGIC

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

B2709 SENSOR HARNESS OPEN [CT-BL]

Description

INFOID:0000000004964377

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

DTC Logic

INFOID:0000000004964378

DTC DETECTION LOGIC

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

Diagnosis Procedure

INFOID:0000000004964379

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	
M36	3	T7	1	Existed

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

Sonar control unit		Ground	Continuity
Connector	Terminal		
M36	3		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	
M36	12	T7	2	Existed

Is the inspection result normal?

YES >> Replace sonar control unit.
NO >> Repair harness or connector.

B270A CENTER SENSOR [BR]

Description

INFOID:0000000004964380

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

DTC Logic

INFOID:0000000004964381

DTC DETECTION LOGIC

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

B270B SENSOR HARNESS OPEN [CT-BR]

Description

INFOID:0000000004964382

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

DTC Logic

INFOID:0000000004964383

DTC DETECTION LOGIC

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

Diagnosis Procedure

INFOID:0000000004964384

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	
M36	4	T8	1	Existed

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

Sonar control unit		Ground	Continuity
Connector	Terminal		
M36	4		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	
M36	12	T8	2	Existed

Is the inspection result normal?

YES >> Replace sonar control unit.
NO >> Repair harness or connector.

POWER SUPPLY AND GROUND CIRCUIT
SONAR CONTROL UNIT

SONAR CONTROL UNIT : Diagnosis Procedure

INFOID:0000000004964385

1.CHECK FUSE

Check for blown fuses.

Power source	Fuse No.
Ignition switch ON or START	2

Is the inspection result normal?

YES >> GO TO 2.
NO >> Be sure to eliminate the 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
Power supply	M36	13	ON	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace sonar control unit power supply circuit.

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.

Signal name	Connector No.	Terminal No.	Ignition switch position	Continuity
Ground	M36	24	OFF	Existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair or replace sonar control unit ground circuit.

R RANGE SIGNAL CIRCUIT

Description

INFOID:0000000004964386

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

Diagnosis Procedure

INFOID:0000000004964387

1.CHECK R RANGE SIGNAL

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

(+)		(–)	Condition	Voltage (Approx.)
Sonar control unit				
Connector	Terminal			
M36	17	Ground	Shift the selector lever to “R”position.	Battery voltage
			Shift the selector lever other than “R” position.	0 V

Is the inspection result normal?

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

BUZZER DRIVE SIGNAL CIRCUIT

Description

INFOID:0000000004964388

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

Diagnosis Procedure

INFOID:0000000004964389

1.CHECK HARNESS BUZZER 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	
M36	23	M31	2	Existed

4. Check continuity between sonar harness connector and ground.

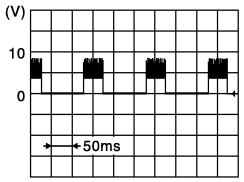
Sonar control unit		Ground	Continuity
Connector	Terminal		
M36	23		Not existed

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK BUZZER DRIVE SIGNAL

1. Connect sonar control unit connector and buzzer connector.
2. Bring an obstacle near to sound the buzzer.
3. Check signal between sonar control unit harness connector terminal and ground.

(+) Sonar control unit		(–)	Condition	Signal
Connector	Terminal			
M36	23	Ground	When buzzer operation.	Waveform period changes according to the distance to an obstacle.  JSNIA1261ZZ
			Other than above.	Battery voltage

Is the inspection result normal?

YES >> Replace buzzer.
NO >> Replace sonar control unit.

ECU DIAGNOSIS INFORMATION

SONAR CONTROL UNIT

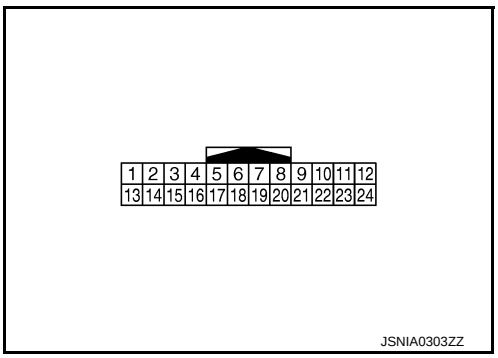
Reference Value

INFOID:0000000004964857

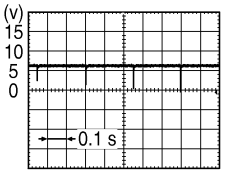
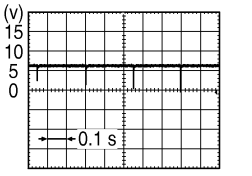
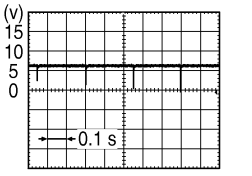
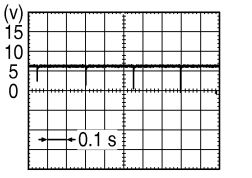
VALUES ON THE DIAGNOSIS TOOL

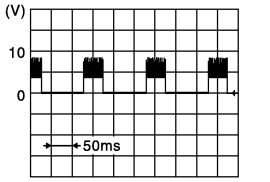
Monitor Item	Display	Description
REAR BUZZER	On	Buzzer (backward) output condition.
	Off	Buzzer (backward) non-output condition.
REVERSE RANGE	On	Selector lever in R position.
	Off	Other than selector lever in R position.
CR SEN [RL]	ERROR	When a sensor is abnormal.
	LV.0	When a sensor is not detection.
	LV.2	The distance between the corner sensor and an obstacle is 50 cm (19.6 in) or more and less then 60 cm (23.6 in).
	LV.3	The distance between the corner sensor and an obstacle is 30 cm (11.8 in) or more and less then 50 cm (19.6 in).
	LV.4	The distance between corner sensor and an obstacle less than 30 cm (11.8 in).
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 50 cm (19.6 in) or more and less then 60 cm (23.6 in).
	LV.3	The distance between the corner sensor and an obstacle is 30 cm (11.8 in) or more and less then 50 cm (19.6 in).
	LV.4	The distance between corner sensor and an obstacle less than 30 cm (11.8 in).
CTR SEN [RL]	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 60 cm (23.6 in) or more and less then 100 cm (39.3 in).
	LV.2	The distance between the center sensor and an obstacle is 50 cm (19.6 in) or more and less then 60 cm (23.6 in).
	LV.3	The distance between the center sensor and an obstacle is 30 cm (11.8 in) or more and less then 50 cm (19.6 in).
	LV.4	The distance between center sensor and an obstacle less than 30 cm (11.8 in).
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 60 cm (23.6 in) or more and less then 100 cm (39.3 in).
	LV.2	The distance between the center sensor and an obstacle is 50 cm (19.6 in) or more and less then 60 cm (23.6 in).
	LV.3	The distance between the center sensor and an obstacle is 30 cm (11.8 in) or more and less then 50 cm (19.6 in).
	LV.4	The distance between center sensor and an obstacle less than 30 cm (11.8 in).

TERMINAL LAYOUT



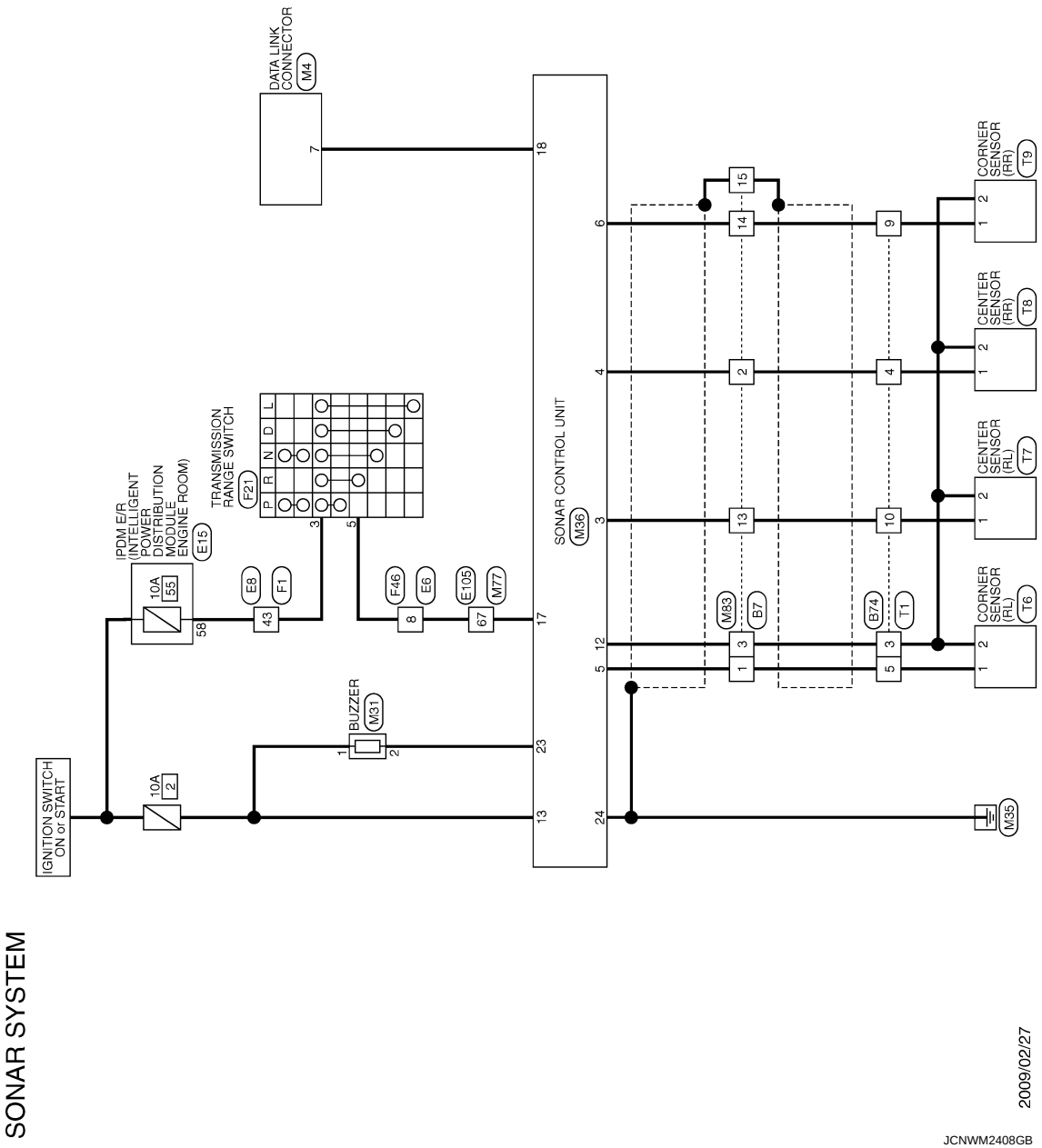
PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition		Reference value (Approx.)
+	–	Signal name	Input/ Output			
3 (R)	12 (W)	Center sensor signal LH	Input	Ignition switch ON	—	 SKIB8942E
4 (G)	12 (W)	Center sensor signal RH	Input	Ignition switch ON	—	 SKIB8942E
5 (B)	12 (W)	Corner sensor signal LH	Input	Ignition switch ON	—	 SKIB8942E
6 (Y)	12 (W)	Corner sensor signal RH	Input	Ignition switch ON	—	 SKIB8942E
12 (W)	Ground	Sensor ground	—	Ignition switch ON	—	0 V
13 (O)	Ground	Ignition power supply	Input	Ignition switch ON	—	Battery voltage

Terminal No. (Wire color)		Description		Condition		Reference value (Approx.)
+	–	Signal name	Input/ Output			
17 (Y/R)	Ground	Reverse signal	Input	Ignition switch ON	Shift the selector lever to “R” position.	Battery voltage
					Shift the selector lever other than “R”position.	0 V
18 (GR/R)	—	K-line (CONSULT-III)	Input/ Output	—	—	—
23 (B/W)	Ground	Buzzer drive signal	Output	Ignition switch ON	When buzzer operation.	Waveform period changes according to the distance to an obstacle.  JSNIA1261ZZ
					Other than above.	Battery voltage
24 (B)	Ground	Ground	—	Ignition switch ON	—	0 V

Wiring Diagram - SONAR SYSTEM -

INFOID:0000000004964858

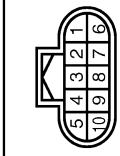


SONAR SYSTEM

Connector No.	B7
Connector Name	WIRE TO WIRE
Connector Type	TH24MW-NH

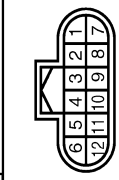
Terminal No.	Color of Wire	Signal Name [Specification]
1	B	–
2	G	–
3	W	–
13	R	–
14	Y	–
15	SHIELD	–

Connector No.	B74
Connector Name	WIRE TO WIRE
Connector Type	RH10FB



Terminal No.	Color of Wire	Signal Name [Specification]
3	W	–
4	G	–
5	B	–
9	Y	–
10	R	–

Connector No.	E6
Connector Name	WIRE TO WIRE
Connector Type	RH12FB



Terminal No.	Color of Wire	Signal Name [Specification]
8	GR	–

Connector No.	E8
Connector Name	WIRE TO WIRE
Connector Type	SAA36MB-RS10-SJZ2

Terminal No.	Color of Wire	Signal Name [Specification]
43	R	–[With CVT]

Connector No.	E15
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS16FW-CS

Terminal No.	Color of Wire	Signal Name [Specification]
58	R	–[With CVT]

Connector No.	E105
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4

Terminal No.	Color of Wire	Signal Name [Specification]
67	GR	–[With CVT]

Connector No.	F1
Connector Name	WIRE TO WIRE
Connector Type	SAA36FB-RS10-SJZ2

Terminal No.	Color of Wire	Signal Name [Specification]
43	R	–

Connector No.	F21
Connector Name	TRANSMISSION RANGE SWITCH
Connector Type	RK08FG

Terminal No.	Color of Wire	Signal Name [Specification]
3	R	–
5	SB	–

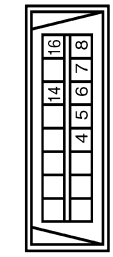
JCNWM2409GB

SONAR SYSTEM

Connector No.	F46
Connector Name	WIRE TO WIRE
Connector Type	RH12MB

Terminal No.	Color of Wire	Signal Name [Specification]
8	SB	–

Connector No.	M4
Connector Name	DATA LINK CONNECTOR
Connector Type	BD16FW

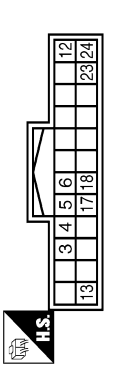


Terminal No.	Color of Wire	Signal Name [Specification]
7	GR/R	–

Connector No.	M31
Connector Name	BUZZER
Connector Type	RK02FBR

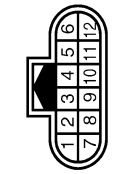
Terminal No.	Color of Wire	Signal Name [Specification]
1	O	–
2	B/W	–

Connector No.	M36
Connector Name	SONAR CONTROL UNIT
Connector Type	TH24FW-NH



Terminal No.	Color of Wire	Signal Name [Specification]
3	R	CENTER SENSOR SIGNAL LH
4	G	CENTER SENSOR SIGNAL RH
5	B	CORNER SENSOR SIGNAL LH
6	Y	CORNER SENSOR SIGNAL RH
12	W	SENSOR GND
13	O	IGNITION POWER SUPPLY
17	Y/R	REVERSE SIGNAL
18	GR/R	K LINE
23	B/W	BUZZER OUTPUT
24	B	GND

Connector No.	M77
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4



Terminal No.	Color of Wire	Signal Name [Specification]
67	Y/R	–

Connector No.	M83
Connector Name	WIRE TO WIRE
Connector Type	TH24FW-NH

Terminal No.	Color of Wire	Signal Name [Specification]
1	B	–
2	G	–
3	W	–
13	R	–
14	Y	–
15	SHIELD	–

Connector No.	T1
Connector Name	WIRE TO WIRE
Connector Type	RH10MB

Terminal No.	Color of Wire	Signal Name [Specification]
3	SB	–
4	G	–
5	B	–
9	Y	–
10	R	–

Connector No.	T6
Connector Name	CORNER SENSOR (RL)
Connector Type	YDX02FB

Terminal No.	Color of Wire	Signal Name [Specification]
1	B	–
2	LG	–

JCNWM2410GB

SONAR SYSTEM

Connector No.	T7
Connector Name	CENTER SENSOR (RL)
Connector Type	YDX02FB

H.S

Terminal No.	Color of Wire	Signal Name [Specification]
1	R	–
2	W	–

Connector No.	T8
Connector Name	CENTER SENSOR (RR)
Connector Type	YDX02FB

H.S

Terminal No.	Color of Wire	Signal Name [Specification]
1	G	–
2	L	–

Connector No.	T9
Connector Name	CORNER SENSOR (RR)
Connector Type	YDX02FB

H.S

Terminal No.	Color of Wire	Signal Name [Specification]
1	Y	–
2	SB	–

JCNWM2411GB

Fail Safe

INFOID:0000000004964859

The sonar control unit detects sonar sensor malfunction and activates warning chime approximately 3 seconds when the selector lever is in the reverse position.

DTC Index

INFOID:0000000004964860

DTC	Display item	Malfunction is detected when...	Refer to
B2704	CORNER SENSOR [RL] [B2704]	Corner sensor rear left is malfunctioning.	SN-10
B2705	SENSOR HARNESS OPEN [CR-RL] [B2705]	Corner sensor rear left harness circuit is open.	SN-11
B2706	CORNER SENSOR [RR] [B2706]	Corner sensor rear right is malfunctioning.	SN-12
B2707	SENSOR HARNESS OPEN [CR-RR] [B2707]	Corner sensor rear right harness circuit is open.	SN-13
B2708	CENTER SENSOR [BL] [B2708]	Center sensor rear left is malfunctioning.	SN-14
B2709	SENSOR HARNESS OPEN [CT-BL] [B2709]	Center sensor rear left harness circuit is open.	SN-15
B270A	CENTER SENSOR [BR] [B270A]	Center sensor rear right is malfunctioning.	SN-16
B270B	SENSOR HARNESS OPEN [CT-BR] [B270B]	Center sensor rear right harness circuit is open.	SN-17

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.

SYMPTOM DIAGNOSIS

SONAR SYSTEM SYMPTOMS

Symptom Table

INFOID:0000000004964926

Symptom	Check item	Diagnosis method
All sonar sensors do not activate.	Buzzer beeps when indicating “On” on “BUZZER” screen of the ACTIVE TEST.	Check reverse signal for sonar control unit. Refer to SN-19, "Diagnosis Procedure".
	Buzzer does not beeps when indicating “On” on “BUZZER” screen of the ACTIVE TEST.	Check buzzer signal for sonar control unit. Refer to SN-20, "Diagnosis Procedure".
	Sonar is not displayed on CONSULT-III menu items.	Check sonar control unit power supply and ground circuit. Refer to SN-18, "SONAR CONTROL UNIT : Diagnosis Procedure".
Any sonar sensor does not activate.	—	Perform the self-diagnosis of CONSULT-III. Refer to SN-8, "CONSULT-III Function (SONAR)".

PRECAUTION

PRECAUTIONS

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

INFOID:0000000005166162

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:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the “SRS AIR BAG”.**
- **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:

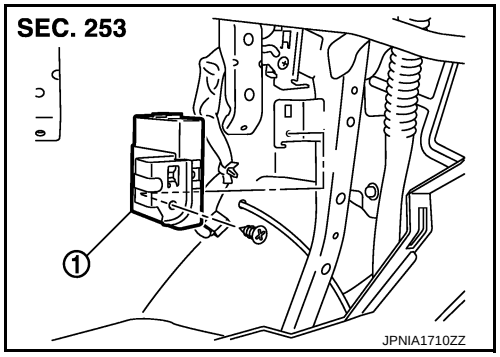
- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious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

REMOVAL AND INSTALLATION

SONAR CONTROL UNIT

Exploded View

INFOID:0000000004964928



1. Sonar control unit

Removal and Installation

INFOID:0000000004964929

REMOVAL

1. Remove the glove box. Refer to IP-12, "Exploded View".
2. Remove sonar control unit screw, then disconnect sonar control unit connector and remove the sonar control unit.

INSTALLATION

Install in the reverse order of removal.

SONAR SENSOR

CENTER SENSOR

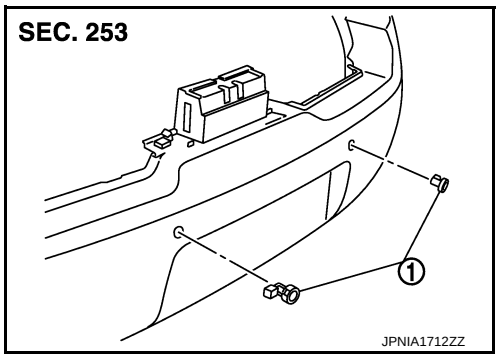
CENTER SENSOR : Exploded View

INFOID:0000000004964930

REMOVAL

Refer to EXT-15, "Exploded View".

DISASSEMBLY



1. Center sensor

CENTER SENSOR : Removal and Installation

INFOID:0000000005102745

REMOVAL

1. Remove the rear bumper fascia. Refer to EXT-15, "Exploded View".
2. Disconnect center sensor connector.
3. Press out the center sensor from back of rear bumper fascia to remove center sensor.

INSTALLATION

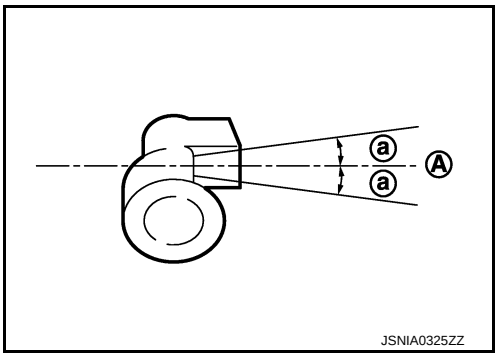
Install in the reverse order of removal.

CAUTION:

The connector direction is within ±10° from the horizontal position when assembling the bumper.

A : Horizontal position

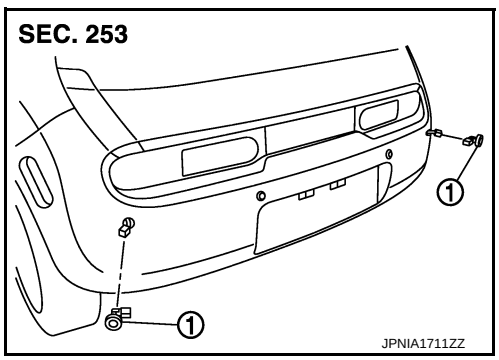
a : 10°



CORNER SENSOR

CORNER SENSOR : Exploded View

INFOID:0000000005102744



1. Corner sensor

CORNER SENSOR : Removal and Installation

INFOID:0000000004964931

REMOVAL

1. Remove the bumper closing. Refer to EXT-15, "Exploded View".
2. Press out the corner sensor from the back of rear bumper fascia.
3. Disconnect corner sensor connector to remove corner sensor.

INSTALLATION

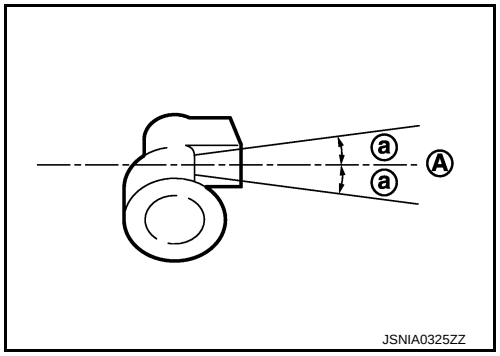
Install in the reverse order of removal.

CAUTION:

The connector direction is within ±10° from the horizontal position when assembling the bumper.

A : Horizontal position

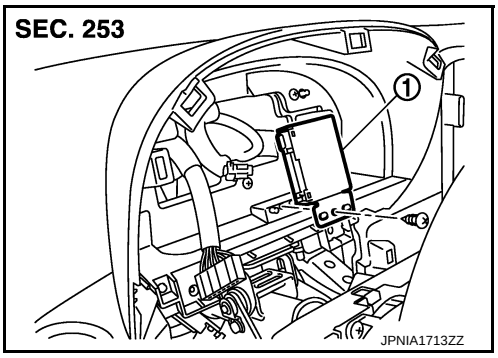
a : 10°



BUZZER

Exploded View

INFOID:0000000004964932



1. Buzzer

Removal and Installation

INFOID:0000000004964933

REMOVAL

1. Remove combination meter. Refer to MWI-97, "Exploded View".
2. Remove buzzer screw, then disconnect buzzer connector and remove the buzzer.

INSTALLATION

Install in the reverse order of removal.