

## SECTION **RF** ROOF

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# PRECAUTIONS

< PRECAUTION >

## PRECAUTION

### PRECAUTIONS

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

INFOID:000000008717422

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

#### **WARNING:**

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SR section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

#### PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

#### **WARNING:**

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

#### Precaution for Work

INFOID:000000008747306

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

# PREPARATION

< PREPARATION >

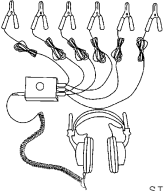
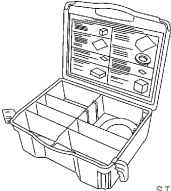
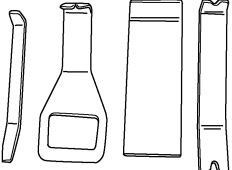
## PREPARATION

### PREPARATION

#### Special Service Tools

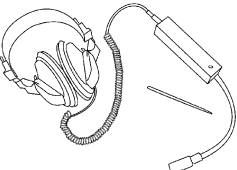

INFOID:000000007988426

The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
<p>—</p> <p>(J-39570) Chassis ear</p>  <p>SIIA0993E</p>	Locating the noise
<p>—</p> <p>(J-43980) NISSAN Squeak and Rattle Kit</p>  <p>SIIA0994E</p>	Repairing the cause of noise
<p>—</p> <p>(J-46534) Trim Tool Set</p>  <p>AWJIA0483ZZ</p>	Removing trim components

#### Commercial Service Tools

INFOID:000000007988427

(Kent-Moore No.) Tool name	Description
<p>(J-39565) Engine ear</p>  <p>SIIA0995E</p>	Locating the noise
<p>( — ) Power tool</p>  <p>PIIB1407E</p>	Loosening nuts, screws and bolts

## COMPONENT PARTS

< SYSTEM DESCRIPTION >

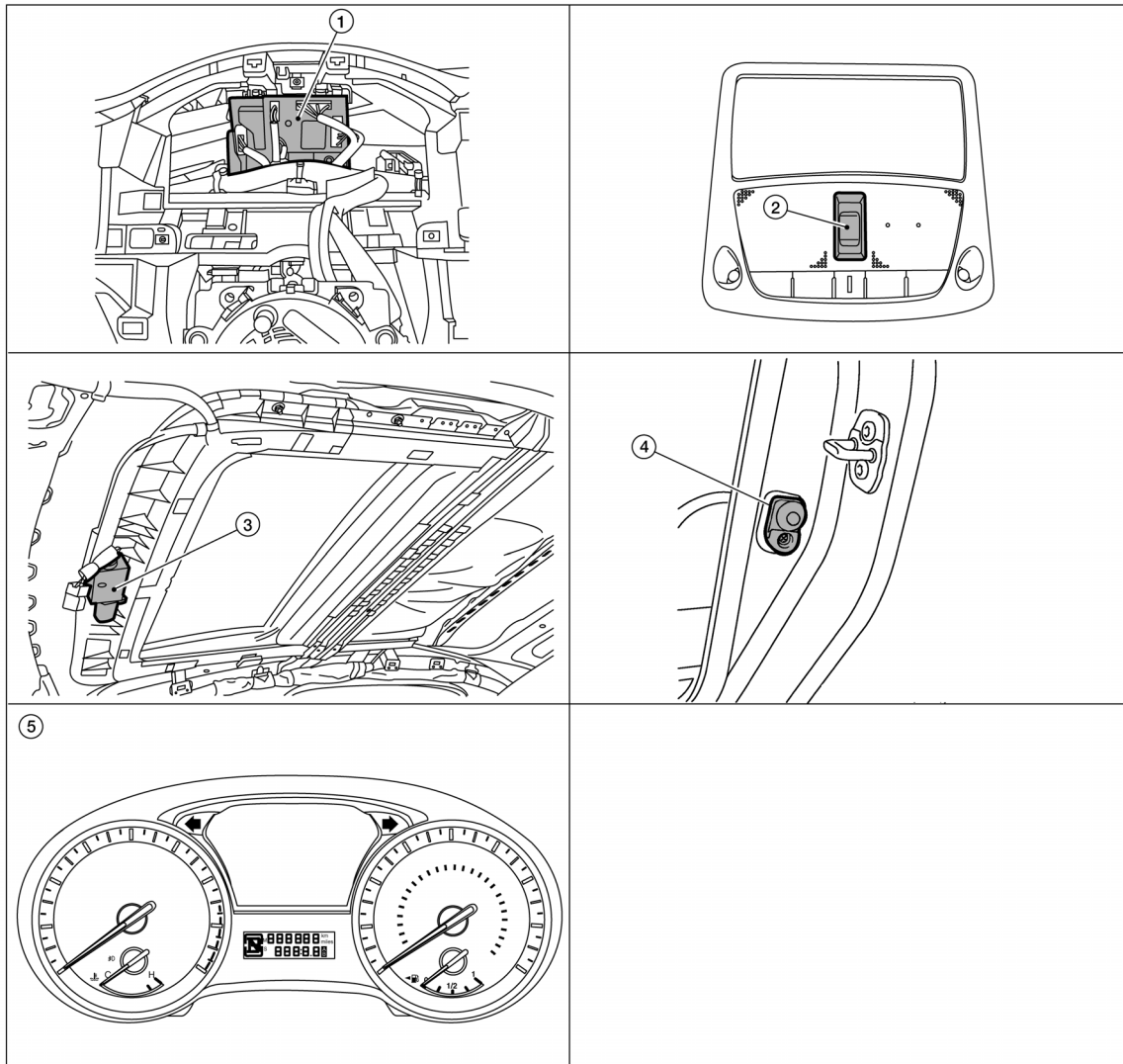
### SYSTEM DESCRIPTION

#### COMPONENT PARTS

#### MOONROOF

#### MOONROOF : Component Parts Location

INFOID:000000008525011



AWBIA128922

- |   |                      |   |
|---|----------------------|---|
| 1. BCM<br>(view with combination meter removed) | 2. Moonroof switch   | 3. Moonroof motor assembly (view with<br>headliner removed) |
| 4. Front door switch LH (RH similar)            | 5. Combination meter |   |

#### MOONROOF : Component Description

INFOID:000000008525012

Component	Function
BCM	Supplies the power supply to moonroof motor assembly.
Moonroof switch	Transmits tilt up/down & slides open/close operation signal to moonroof motor assembly.
Moonroof motor assembly	The moonroof motor and CPU are integrated into one unit that enables tilt up/down & slide open/close by moonroof switch operation.
Front door switch	Detects door open/close condition and transmits to BCM.
Combination meter	Transmits vehicle speed signal to moonroof motor assembly.

# SYSTEM

< SYSTEM DESCRIPTION >

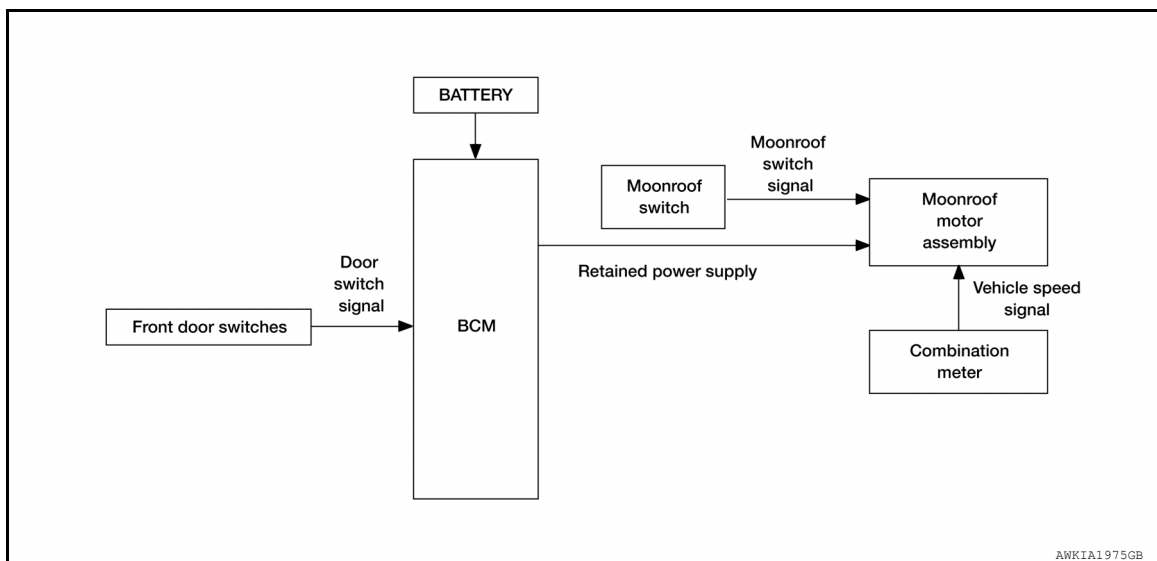
## SYSTEM

### MOONROOF

#### MOONROOF : System Diagram

INFOID:000000007988392

### MOONROOF



#### MOONROOF : System Description

INFOID:000000007988393

### MOONROOF SYSTEM

#### INPUT/OUTPUT SIGNAL CHART

Item	Input signal to moonroof motor assembly	Moonroof motor function	Actuator
Moonroof switch	Moonroof switch signal (tilt down or slide open)	Receives signal and moves the moonroof assembly to the correct position.	Moonroof motor
	Moonroof switch signal (tilt up or slide close)		
Combination meter	Vehicle speed signal	Receives speed signal and determines the amount of torque the motor requires.	
BCM	RAP signal	Retained power after the key is turned OFF and the front doors stay closed.	

### MOONROOF OPERATION

- Moonroof motor assembly operates with the power supply that is output from BCM while ignition switch is ON or retained power is operating.
- Tilt up/ down & slide open/ close signals from moonroof switch enables moonroof motor to move arbitrarily.
- Moonroof motor assembly receives a vehicle speed signal from combination meter and controls the moonroof motor torque of tilt-down at the time of high speed operation.

### AUTO OPERATION

Moonroof AUTO feature makes it possible to slide open and slide close or tilt up and tilt down the moonroof without holding the moonroof switch in the slide open/tilt down or slide close/tilt up position.

### RETAINED POWER OPERATION

- Retained power operation is an additional power supply function that enables the moonroof system to operate during the first 45 seconds that the ignition switch is cycled from the ON position to the OFF position.

Retained power function cancel conditions

- Front door CLOSE (door switch OFF)→OPEN (door switch ON).

< SYSTEM DESCRIPTION >

- When ignition switch is ON again.
- When timer time passes. (45 seconds)

ANTI-PINCH FUNCTION

The CPU of moonroof motor assembly monitors the moonroof motor operation and the moonroof position (fully-closed or other) by the signals from moonroof motor.

When moonroof motor detects an interruption during the following slide close and tilt down operation, moonroof switch controls the motor for open and the moonroof will operate until full up position (when tilt down operates) or 100 mm (3.94 in) or more in an open direction (when slide close operates):

- Close operation and tilt down when ignition switch is in the “ON” position

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

## DIAGNOSIS SYSTEM (BCM)

< SYSTEM DESCRIPTION >

### DIAGNOSIS SYSTEM (BCM)

#### COMMON ITEM

#### COMMON ITEM : CONSULT Function (BCM - COMMON ITEM)

INFOID:000000008682978

#### APPLICATION ITEM

CONSULT performs the following functions via CAN communication with BCM.

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

#### SYSTEM APPLICATION

BCM can perform the following functions.

System	Sub System	Direct Diagnostic Mode						
		Ecu Identification	Self Diagnostic Result	Data Monitor	Active Test	Work support	Configuration	CAN Diag Support Mntr
Door lock	DOOR LOCK		×	×	×	×		
Rear window defogger	REAR DEFOGGER			×	×	×		
Warning chime	BUZZER			×	×			
Interior room lamp timer	INT LAMP			×	×	×		
Remote keyless entry system	MULTI REMOTE ENT			×	×	×		
Exterior lamp	HEADLAMP			×	×	×		
Wiper and washer	WIPER			×	×	×		
Turn signal and hazard warning lamps	FLASHER			×	×			
Air conditioner	AIR CONDITIONER			×				
Intelligent Key system	INTELLIGENT KEY		×	×	×	×		
Combination switch	COMB SW			×				
BCM	BCM	×	×			×	×	×
Immobilizer	IMMU		×	×	×			
Interior room lamp battery saver	BATTERY SAVER			×	×			
Trunk open	TRUNK			×				
Vehicle security system	THEFT ALM			×	×	×		
RAP system	RETAINED PWR			×				
Signal buffer system	SIGNAL BUFFER			×				
TPMS	AIR PRESSURE MONITOR		×	×	×	×		

#### RETAINED PWR



## DIAGNOSIS SYSTEM (BCM)

< SYSTEM DESCRIPTION >

RETAINED PWR : CONSULT Function (BCM - RETAINED PWR)

INFOID:0000000008682979

### DATA MONITOR

Monitor Item [Unit]	Description
DOOR SW-DR [On/Off]	Indicates condition of front door switch LH.
DOOR SW-AS [On/Off]	Indicates condition of front door switch RH.

A

B

C

D

E

F

G

H

I

J

RF

L

M

N

O

P

## BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS INFORMATION >

### ECU DIAGNOSIS INFORMATION

#### BCM (BODY CONTROL MODULE)

##### List of ECU Reference

INFOID:000000008525015

ECU	Reference
BCM	<a href="#">BCS-28, "Reference Value"</a>
	<a href="#">BCS-47, "Fail Safe"</a>
	<a href="#">BCS-47, "DTC Inspection Priority Chart"</a>
	<a href="#">BCS-49, "DTC Index"</a>

# MOONROOF MOTOR ASSEMBLY

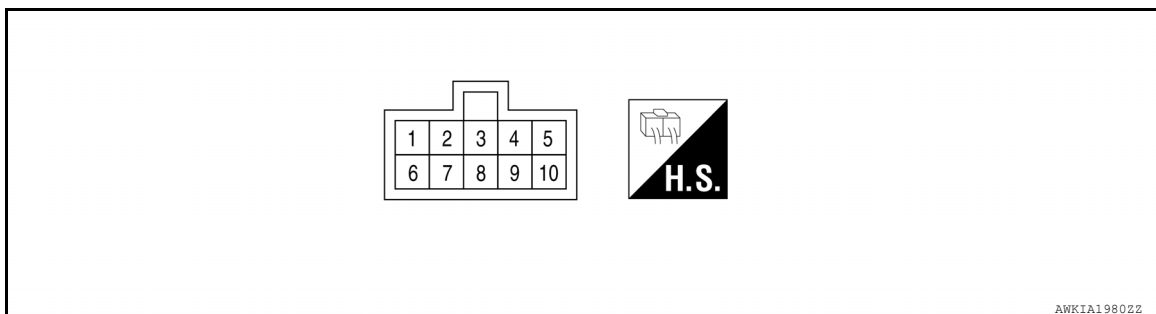
< ECU DIAGNOSIS INFORMATION >

## MOONROOF MOTOR ASSEMBLY

### Reference Value

INFOID:000000007988413

### TERMINAL LAYOUT



### PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition	Voltage (V) (Approx.)
+	-	Signal name	Input/ Output		
1 (G)	Ground	Moonroof close switch signal	Input	Moonroof switch in following position • TILT UP • SLIDE CLOSE	0
				Other than above	Battery voltage
2 (B)	Ground	Ground	—	—	0
5 (Y)	Ground	Moonroof open switch signal	Input	Moonroof switch in following position • TILT DOWN • SLIDE OPEN	0
				Other than above	Battery voltage
7 (R/Y)	Ground	Moonroof power supply	Input	—	Battery voltage
8 (L/B)	Ground	Vehicle speed signal (2-pulse)	Input	Speedometer operated [When vehicle speed is approx.40km/h (25MPH)]	
9 (L/W)	Ground	RAP signal	Input	Ignition switch ON	Battery voltage
				Within 45 second after ignition switch is turned to OFF.	Battery voltage
				When driver side or passenger side door is opened during retained power operation.	0
10 (R)	Ground	Ground	—	—	0

# MOONROOF SYSTEM

< WIRING DIAGRAM >

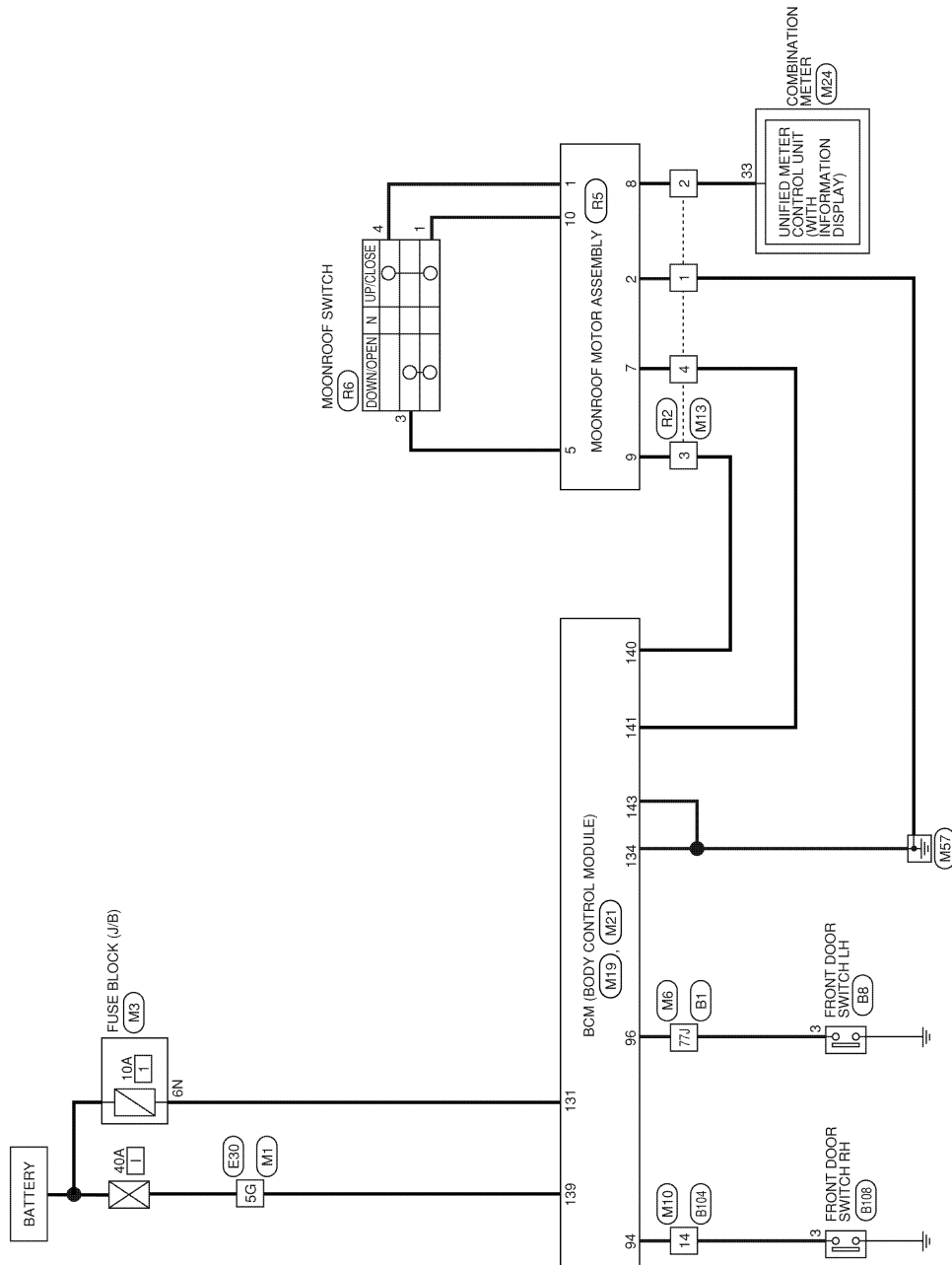
## WIRING DIAGRAM

### MOONROOF SYSTEM

Wiring Diagram

INFOID:000000007988415

MOONROOF

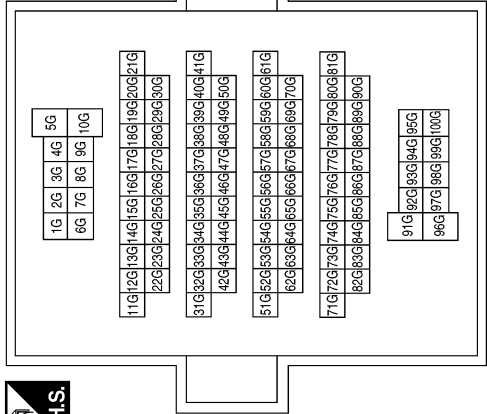


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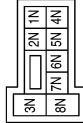
MOONROOF CONNECTORS

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



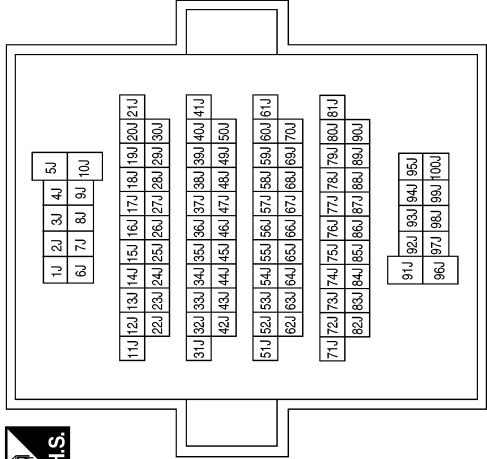
Terminal No.	5G
Color of Wire	W
Signal Name	—

Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE



Terminal No.	6N
Color of Wire	W
Signal Name	—

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



Terminal No.	77J
Color of Wire	BR
Signal Name	—

A  
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D  
E  
F  
G  
H  
I  
J  
RF  
L  
M  
N  
O  
P

# MOONROOF SYSTEM

## < WIRING DIAGRAM >

Connector No.	M19
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	GRAY



32	91	90	89	88	87	86	85	84	83	82	81
104	103	102	101	100	99	98	97	96	95	94	93

Terminal No.	Color of Wire	Signal Name
94	SB	AS DOOR SW
96	BR	DR DOOR SW

Connector No.	M13
Connector Name	WIRE TO WIRE
Connector Color	WHITE



1	2	3	4
---	---	---	---

Terminal No.	Color of Wire	Signal Name
1	GR	-
2	R	-
3	LG	-
4	V	-

Connector No.	M10
Connector Name	WIRE TO WIRE
Connector Color	BROWN



7	6	5	4	3	2	1		
16	15	14	13	12	11	10	9	8

Terminal No.	Color of Wire	Signal Name
14	SB	-

Connector No.	M24
Connector Name	COMBINATION METER
Connector Color	WHITE



20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21

Terminal No.	Color of Wire	Signal Name
33	R	SPEED 2P/R

Connector No.	M21
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	WHITE



137	136	135	134	133	132	131	130	129
143	142	141	140	139	138			

Terminal No.	Color of Wire	Signal Name
131	W	BAT BCM FUSE
134	B	GND2
139	W	BAT POWER F/L
140	LG	P/W POWER SUPPLY IGN
141	V	P/W POWER SUPPLY BAT
143	B	GND1

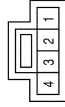
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# MOONROOF SYSTEM

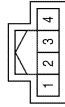
## < WIRING DIAGRAM >

Connector No.	R2
Connector Name	WIRE TO WIRE
Connector Color	WHITE



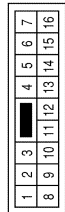
Terminal No.	Color of Wire	Signal Name
1	B	-
2	L/B	-
3	L/W	-
4	R/Y	-

Connector No.	B108
Connector Name	FRONT DOOR SWITCH RH
Connector Color	WHITE



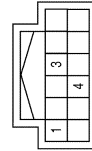
Terminal No.	Color of Wire	Signal Name
3	L	-

Connector No.	B104
Connector Name	WIRE TO WIRE
Connector Color	BROWN



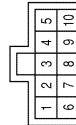
Terminal No.	Color of Wire	Signal Name
14	L	-

Connector No.	R6
Connector Name	MOONROOF SWITCH
Connector Color	WHITE



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

Connector No.	R5
Connector Name	MOONROOF MOTOR ASSEMBLY
Connector Color	GRAY



Terminal No.	Color of Wire	Signal Name
1	G	CLOSE T UP
2	B	GND
5	Y	OPEN T DOWN
7	R/Y	+B
8	L/B	SPEED (2P)
9	L/W	+IGN
10	R	GROUND

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# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

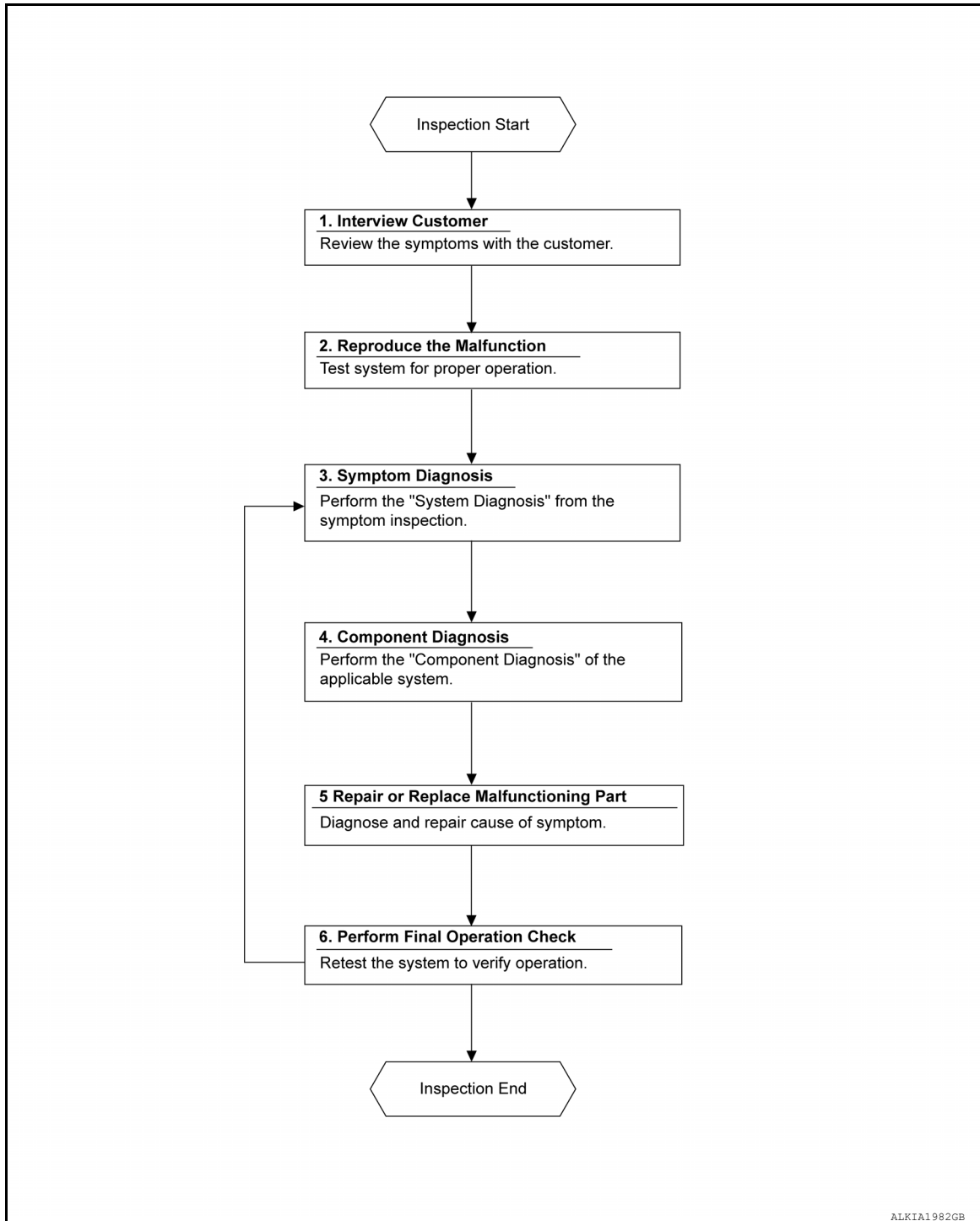
## BASIC INSPECTION

### DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000008666169

#### OVERALL SEQUENCE



#### DETAILED FLOW

##### 1. OBTAIN INFORMATION ABOUT SYMPTOM

Interview the customer to obtain as much information as possible about the conditions and environment under which the malfunction occurred.

# DIAGNOSIS AND REPAIR WORKFLOW

## < BASIC INSPECTION >

---

>> GO TO 2.

### 2. CONFIRM CONCERN

---

Check the malfunction on the vehicle that the customer describes.  
Inspect the relation of the symptoms and the condition when the symptoms occur.

>> GO TO 3.

### 3. IDENTIFY THE MALFUNCTIONING SYSTEM WITH SYMPTOM DIAGNOSIS

---

Use Symptom diagnosis from the symptom inspection result in step 2 and then identify where to start performing the diagnosis based on possible causes and symptoms.

>> GO TO 4.

### 4. PERFORM THE COMPONENT DIAGNOSIS OF THE APPLICABLE SYSTEM

---

Perform the diagnosis with Component diagnosis of the applicable system.

>> GO TO 5.

### 5. REPAIR OR REPLACE THE MALFUNCTIONING PARTS

---

Repair or replace the specified malfunctioning parts.

>> GO TO 6.

### 6. FINAL CHECK

---

Check that malfunctions are not reproduced when obtaining the malfunction information from the customer, referring to the symptom inspection result in step 2.

Are the malfunctions corrected?

YES >> Inspection End.

NO >> GO TO 3.

# INSPECTION AND ADJUSTMENT

< BASIC INSPECTION >

## INSPECTION AND ADJUSTMENT

### ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT

### ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Description

INFOID:000000007988389

#### MEMORY RESET PROCEDURE

1. Please observe the following instructions at confirming the moonroof operation.

**NOTE:**

Do not disconnect the electronic power while the moonroof is operating or within 5 seconds after the moonroof stops. (to wipe-out the memory of lid position and operating friction.)

2. Initialization of system should be conducted after the following conditions.
  - When the moonroof motor is changed.
  - When the moonroof does not operate normally. (Incomplete initialization conditions)

### ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement

INFOID:000000007988390

#### INITIALIZATION PROCEDURE

If the moonroof does not open or close automatically, use the following procedure to return moonroof operation to normal.

**NOTE:**

If the moonroof switch is released at any time during step 4, the procedure must be started over again. Leave the ignition switch ON for at least 2 seconds after this procedure.

1. Push the ignition switch to the ON position.
2. Hold the moonroof switch in the tilt up position. Release the switch when the moonroof has reached the full tilt up position.
3. Hold the moonroof switch in the tilt up position again. After a delay, the moonroof will backup. Release the switch.
4. Within 4 seconds of releasing the switch in step 3, hold the moonroof switch in the tilt up position again. The moonroof will move from the full tilt-up → slide-close → slide-open → slide-close → tilt-up → slide-close. Release the switch, initialization is complete if the moonroof operates normally.

#### ANTI-PINCH FUNCTION

1. Fully open the moonroof to the full open position.
2. Place a piece of wood at the fully closed position.
3. Close the moonroof completely with auto-slide close function.
4. Moonroof should make contact and then tilt up in reverse for 100mm (3.94 in.) (approx.).

**CAUTION:**

- Do not test the anti-pinch function with your hands or other part of body parts because they may be pinched.
- Depending on environment and driving conditions, if a similar impact or load is applied to the moonroof it may lower.
- Test the auto-slide operation before inspection when the system initialization is performed.
- Perform the initialization procedure when the auto-slide operation or anti-pinch function does not operate normally.

## POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

### DTC/CIRCUIT DIAGNOSIS

#### POWER SUPPLY AND GROUND CIRCUIT

##### BCM

##### BCM : Diagnosis Procedure

INFOID:000000008700687

Regarding Wiring Diagram information, refer to [BCS-52, "Wiring Diagram"](#).

### 1. CHECK FUSE AND FUSIBLE LINK

Check that the following fuse and fusible link are not blown.

Terminal No.	Signal name	Fuse and fusible link No.
139	Fusible link battery power	I (40A)
131	BCM battery fuse	1 (10A)

Is the fuse or fusible link blown?

YES >> Replace the blown fuse or fusible link after repairing the affected circuit.

NO >> GO TO 2

### 2. CHECK POWER SUPPLY CIRCUIT

1. Disconnect BCM connector M21.

2. Check voltage between BCM connector M21 terminals 131, 139 and ground.

BCM		Ground	Voltage (Approx.)
Connector	Terminal		
M21	131	—	Battery voltage
	139		

Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace harness or connectors.

### 3. CHECK GROUND CIRCUIT

Check continuity between BCM connector M21 terminals 134, 143 and ground.

BCM		Ground	Continuity
Connector	Terminal		
M21	134	—	Yes
	143		

Is the inspection result normal?

YES >> Inspection End.

NO >> Repair or replace harness or connectors.

## MOONROOF MOTOR ASSEMBLY

### MOONROOF MOTOR ASSEMBLY : Description

INFOID:000000008700688

- BCM supplies power.
- CPU is integrated in moonroof motor assembly.
- Tilts up/down & slides open/close by moonroof switch operation.
- In order to close moonroof lid certainly with the signal from combination meter at the time of high speed run, the moonroof motor torque at the time of tilt-down operation is controlled.

# POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

## MOONROOF MOTOR ASSEMBLY : Component Function Check

INFOID:000000008700689

### 1. CHECK MOONROOF MOTOR FUNCTION

Do tilt up/down & slide open/close functions operate normally with moonroof switch?

Is the inspection result normal?

YES >> Moonroof motor assembly is OK.

NO >> Refer to [RF-21, "MOONROOF MOTOR ASSEMBLY : Diagnosis Procedure"](#).

## MOONROOF MOTOR ASSEMBLY : Diagnosis Procedure

INFOID:000000008700690

Regarding Wiring Diagram information, refer to [RF-12, "Wiring Diagram"](#).

### MOONROOF MOTOR ASSEMBLY

#### 1. CHECK POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect moonroof motor assembly connector.
3. Turn ignition switch ON.
4. Check voltage between moonroof motor assembly connector R5 and ground.

Moonroof motor assembly connector	Terminal	Ground	Voltage (Approx.)
R5	7		Battery voltage
	9		

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 3.

#### 2. CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between moonroof motor assembly connector R5 and ground.

Moonroof motor assembly connector	Terminal	Ground	Continuity
R5	2		Yes

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace the harness or connectors.

#### 3. CHECK MOONROOF MOTOR CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM.
3. Check continuity between BCM connector M21 and moonroof motor assembly connector R5.

BCM connector	Terminal	Moonroof motor assembly connector	Terminal	Continuity
M21	141	R5	7	Yes
	140		9	

4. Check continuity between BCM connector M21 and ground.

BCM connector	Terminal	Ground	Continuity
M21	141		No
	140		

Is the inspection result normal?

## POWER SUPPLY AND GROUND CIRCUIT

### < DTC/CIRCUIT DIAGNOSIS >

- YES >> GO TO 4.  
NO >> Repair or replace the harness or connectors.

#### 4. CHECK BCM POWER SUPPLY

1. Connect BCM.
2. Check voltage between BCM connector M21 and ground.

BCM connector	Terminal	Ground	Voltage (Approx.)
M21	139		Battery voltage
	131		

#### Is the inspection result normal?

- YES >> Check condition of harness and connectors.  
NO >> Replace BCM. Refer to [BCS-77. "Removal and Installation"](#).

#### 5. CHECK MOONROOF SWITCH INPUT SIGNAL

1. Connect moonroof motor assembly.
2. Turn ignition switch ON.
3. Check voltage between moonroof motor assembly connector R5 and ground.

Moonroof motor as- sembly connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
R5	5	Ground	Moonroof switch is operated TILT DOWN or SLIDE OPEN	0
			Other than above	Battery voltage
	1		Moonroof switch is operated TILT UP or SLIDE CLOSE	0
			Other than above	Battery voltage

#### Is the inspection result normal?

- YES >> GO TO 8.  
NO >> GO TO 6.

#### 6. CHECK MOONROOF SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect moonroof motor assembly and moonroof switch.
3. Check continuity between moonroof motor assembly connector R5 and moonroof switch connector R6.

Moonroof motor assembly connector	Terminal	Moonroof switch connector	Terminal	Continuity
R5	5	R6	3	Yes
	1		4	

4. Check continuity between moonroof motor assembly connector R5 and ground.

Moonroof motor assembly connector	Terminal	Ground	Continuity
R5	5		No
	1		

#### Is the inspection result normal?

- YES >> GO TO 7.  
NO >> Repair or replace the harness and connectors.

#### 7. CHECK MOONROOF SWITCH GROUND CIRCUIT

1. Connect moonroof motor assembly.
2. Check continuity between moonroof switch connector R6 and ground.

# POWER SUPPLY AND GROUND CIRCUIT

## < DTC/CIRCUIT DIAGNOSIS >

Moonroof switch connector	Terminal	Ground	Continuity
R6	1		Yes

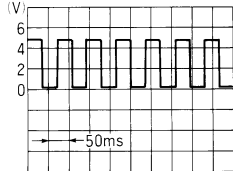
Is the inspection result normal?

YES >> Refer to [RF-23, "MOONROOF MOTOR ASSEMBLY : Component Inspection"](#).

NO >> Repair or replace the harness or connectors.

## 8. CHECK COMBINATION METER SIGNAL

- Check signal between moonroof motor assembly connector R5 and ground with oscilloscope.

Terminals		Condition	Signal (Reference value)
(+)	(-)		
Moonroof motor assembly connector	Terminal		
R5	8	Speed meter operated [When vehicle speed is approx.40km/h (25MPH)]	 ELF1080D

Is the inspection result normal?

YES >> Replace moonroof motor assembly. Refer to [RF-46, "Removal and Installation"](#). After that, refer to [RF-19, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#).

NO >> GO TO 9.

## 9. CHECK COMBINATION METER CIRCUIT

- Turn ignition switch OFF.
- Disconnect combination meter.
- Check continuity between combination meter connector M24 and moonroof motor assembly connector R5.

Combination meter connector	Terminal	Moonroof motor assembly connector	Terminal	Continuity
M24	33	R5	8	Yes

- Check continuity between combination meter connector M24 and ground.

Combination meter connector	Terminal	Ground	Continuity
M24	33		No

Is the inspection result normal?

YES >> Replace combination meter. Refer to [MWI-81, "Removal and Installation"](#).

NO >> Repair or replace the harness or connectors.

## MOONROOF MOTOR ASSEMBLY : Component Inspection

INFOID:000000008700691

### MOONROOF SWITCH

#### 1. CHECK MOONROOF SWITCH

- Turn ignition switch OFF.
- Disconnect moonroof switch.
- Check continuity between moonroof switch terminals.

## POWER SUPPLY AND GROUND CIRCUIT

### < DTC/CIRCUIT DIAGNOSIS >

Terminals		Condition	Continuity
3	1	Moonroof switch is operated TILT DOWN or SLIDE OPEN	Yes
		Other than above	No
4		Moonroof switch is operated TILT UP or SLIDE CLOSE	Yes
		Other than above	No

#### Is the inspection result normal?

YES >> Moonroof switch is OK.

NO >> Replace moonroof switch (map lamp assembly). Refer to [INL-63, "Removal and Installation"](#).

### MOONROOF MOTOR ASSEMBLY : Special Repair Requirement

INFOID:000000008700692

#### 1. PERFORM INITIALIZATION PROCEDURE

Perform initialization procedure.

Refer to [RF-19, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#).

>> GO TO 2.

#### 2. CHECK ANTI-PINCH OPERATION

Check anti-pinch operation.

Refer to [RF-19, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#).

#### Is the inspection result normal?

YES >> Inspection End.

NO >> Check fitting adjustment. Refer to [RF-43, "Inspection"](#).



# MOONROOF SWITCH

< DTC/CIRCUIT DIAGNOSIS >

## MOONROOF SWITCH

### Description

INFOID:0000000008525598

Transmits switch operation signal to moonroof motor assembly.

### Diagnosis Procedure

INFOID:0000000008525599

Regarding Wiring Diagram information, refer to [RF-12, "Wiring Diagram"](#).

### 1.CHECK MOONROOF SWITCH INPUT SIGNAL

1. Turn ignition switch ON.
2. Check voltage between moonroof motor assembly harness connector R5 and ground.

(+) Moonroof motor assembly		(-)	Condition	Voltage (Approx.)
Connector	Terminals			
R5	5	Ground	Moonroof switch is operated OPEN (1st)	0
			Other than above	Battery voltage
	1		Moonroof switch is operated CLOSE (2nd)	0
			Other than above	Battery voltage

Is the inspection result normal?

YES >> Inspection End.

NO >> GO TO 2.

### 2.CHECK MOONROOF SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect moonroof motor assembly connector and moonroof switch connector.
3. Check continuity between moonroof motor assembly harness connector R5 and moonroof switch harness connector R6.

Moonroof motor assembly		Moonroof switch		Continuity
Connector	Terminal	Connector	Terminal	
R5	1	R6	4	Yes
	5		3	

4. Check continuity between moonroof motor assembly harness connector R5 and ground.

Moonroof motor assembly		Ground	Continuity
Connector	Terminal		
R5	1		No
	5		

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace the harness or connectors.

### 3.CHECK MOONROOF SWITCH GROUND CIRCUIT

Check continuity between moonroof switch harness connector R6 and ground.

## MOONROOF SWITCH

### < DTC/CIRCUIT DIAGNOSIS >

Moonroof switch		Ground	Continuity
Connector	Terminal		
R6	1		Yes

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace the harness or connectors.

### 4. CHECK MOONROOF SWITCH

Check moonroof switch.

Refer to [RF-26, "Component Inspection"](#).

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace moonroof switch. Refer to [INL-63, "Removal and Installation"](#).

### 5. CHECK INTERMITTENT INCIDENT

Refer to [GI-47, "Intermittent Incident"](#).

>> Inspection End.

## Component Inspection

INFOID:000000008525600

## MOONROOF SWITCH

### 1. CHECK MOONROOF SWITCH

1. Turn ignition switch OFF.
2. Disconnect moonroof switch.
3. Check continuity between moonroof switch terminals.

Terminals		Condition	Continuity
3	1	Moonroof switch is operated TILT DOWN or SLIDE OPEN OPEN	Yes
		Other than above	No
4		Moonroof switch is operated TILT UP or SLIDE CLOSE CLOSE	Yes
		Other than above	No

#### Is the inspection result normal?

YES >> Moonroof switch is OK.

NO >> Replace moonroof switch. Refer to [INL-63, "Removal and Installation"](#).

# DOOR SWITCH

< DTC/CIRCUIT DIAGNOSIS >

## DOOR SWITCH

### Description

INFOID:0000000008672335

Detects door open/close condition.

### Component Function Check

INFOID:0000000008672336

### 1.CHECK FUNCTION

#### With CONSULT

Check door switches DOOR SW-DR, DOOR SW-AS, DOOR SW-RL, DOOR SW-RR in Data Monitor mode with CONSULT.

Monitor item	Condition
DOOR SW-DR	CLOSE → OPEN: OFF → ON
DOOR SW-AS	
DOOR SW-RL	
DOOR SW-RR	

Is the inspection result normal?

YES >> Door switch is OK.

NO >> Refer to [RF-27, "Diagnosis Procedure"](#).

### Diagnosis Procedure

INFOID:0000000008672337

Regarding Wiring Diagram information, refer to [DLK-50. "Wiring Diagram"](#).

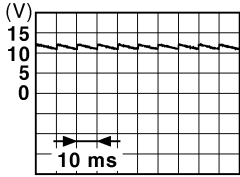
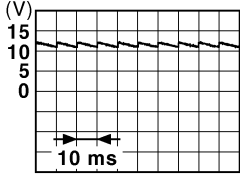
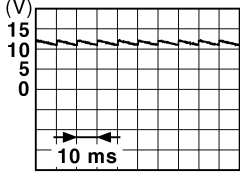
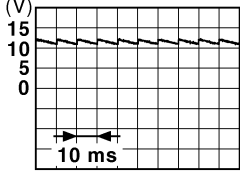
### 1.CHECK DOOR SWITCH INPUT SIGNAL

1. Turn ignition switch OFF.
2. Check signal between BCM connector and ground with oscilloscope.

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# DOOR SWITCH

## < DTC/CIRCUIT DIAGNOSIS >

Terminals		Door condition	Voltage (V) (Approx.)
(+)	(-)		
BCM connector	Terminal		
M19	96	OPEN	0
		CLOSE	 JPMIA0011GB
	94	OPEN	0
		CLOSE	 JPMIA0011GB
	93	OPEN	0
		CLOSE	 JPMIA0011GB
	82	OPEN	0
		CLOSE	 JPMIA0011GB

Is the inspection result normal?

YES >> GO TO 4

NO >> GO TO 2

## 2. CHECK DOOR SWITCH CIRCUIT

1. Disconnect BCM connector.
2. Check continuity between BCM connector and door switch connector.

BCM connector	Terminal	Door switch connector	Terminal	Continuity
M19	96	Front door switch LH	Ground part of door switch	Yes
	94	Front door switch RH		
	93	Rear door switch RH		
	82	Rear door switch LH		

## DOOR SWITCH

### < DTC/CIRCUIT DIAGNOSIS >

3. Check continuity between BCM connector and ground.

BCM connector	Terminal		Continuity
M19	96	Ground	No
	94		
	93		
	82		

Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace harness between BCM and door switch.

### 3.CHECK DOOR SWITCH

Refer to [RF-29, "Component Inspection"](#).

Is the inspection result normal?

YES >> GO TO 4

NO >> Replace malfunctioning door switch.

### 4.CHECK INTERMITTENT INCIDENT

Refer to [GI-47, "Intermittent Incident"](#).

>> Inspection End.

## Component Inspection

INFOID:0000000008672338

### 1.CHECK DOOR SWITCH

1. Turn ignition switch OFF.
2. Disconnect door switch connector.
3. Check door switch.

Terminal		Door switch condition	Continuity
Door switch			
3	Ground part of door switch	Pressed	No
		Released	Yes

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace malfunctioning door switch.

# MOONROOF DOES NOT OPERATE PROPERLY

< SYMPTOM DIAGNOSIS >

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## SYMPTOM DIAGNOSIS

### MOONROOF DOES NOT OPERATE PROPERLY

#### Diagnosis Procedure

INFOID:000000007988416

#### 1. CHECK BCM POWER SUPPLY AND GROUND CIRCUIT

---

Check BCM power supply and ground circuit.

Refer to [BCS-71, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace malfunctioning parts.

#### 2. CHECK MOONROOF MOTOR ASSEMBLY POWER SUPPLY AND GROUND CIRCUIT

---

Check moonroof motor assembly power supply and ground circuit.

Refer to [RF-21, "MOONROOF MOTOR ASSEMBLY : Component Function Check"](#).

Is the inspection result normal?

YES >> Check intermittent incident. Refer to [GI-47, "Intermittent Incident"](#).

NO >> Repair or replace malfunctioning parts.

# AUTO OPERATION DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

## AUTO OPERATION DOES NOT OPERATE

### Diagnosis Procedure

INFOID:000000007988417

#### 1. PERFORM INITIALIZATION PROCEDURE

Perform initialization procedure.

Refer to [RF-19. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#).

Is the inspection result normal?

YES >> Inspection End.

NO >> Perform basic inspection. Refer to [RF-17. "Work Flow"](#).

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

## MOONROOF DOES NOT OPERATE ANTI-PINCH FUNCTION

< SYMPTOM DIAGNOSIS >

---

### MOONROOF DOES NOT OPERATE ANTI-PINCH FUNCTION

#### Diagnosis Procedure

INFOID:000000007988420

#### 1. PERFORM INITIALIZATION PROCEDURE

---

Perform initialization procedure.

Refer to [RF-19. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#).

Is the inspection result normal?

YES >> Inspection End.

NO >> Perform basic inspection. Refer to [RF-17. "Work Flow"](#).



## DOES NOT STOP FULLY-OPEN OR FULLY-CLOSED POSITION

< SYMPTOM DIAGNOSIS >

### DOES NOT STOP FULLY-OPEN OR FULLY-CLOSED POSITION

#### Diagnosis Procedure

INFOID:000000007988418

#### 1. PERFORM INITIALIZATION PROCEDURE

Perform initialization procedure.

Refer to [RF-19. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#).

Is the inspection result normal?

YES >> Inspection End.

NO >> Perform basic inspection. Refer to [RF-17. "Work Flow"](#).

A

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## RETAINED POWER OPERATION DOES NOT OPERATE PROPERLY

< SYMPTOM DIAGNOSIS >

---

## RETAINED POWER OPERATION DOES NOT OPERATE PROPERLY

### Diagnosis Procedure

INFOID:000000007988419

#### 1.CHECK FRONT DOOR SWITCH

---

Check front door switch.

Refer to [DLK-99, "Component Function Check"](#).

Is the inspection result normal?

YES >> Check intermittent incident. Refer to [GI-47, "Intermittent Incident"](#).

NO >> Repair or replace malfunctioning parts.

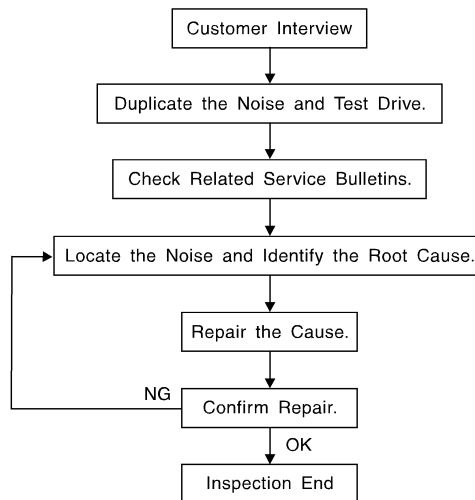
# SQUEAK AND RATTLE TROUBLE DIAGNOSES

< SYMPTOM DIAGNOSIS >

## SQUEAK AND RATTLE TROUBLE DIAGNOSES

### Work Flow

INFOID:000000007988421



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### CUSTOMER INTERVIEW

Interview the customer if possible, to determine the conditions that exist when the noise occurs. Use the Diagnostic Worksheet during the interview to document the facts and conditions when the noise occurs and any customer's comments; refer to [RF-39, "Diagnostic Worksheet"](#). This information is necessary to duplicate the conditions that exist when the noise occurs.

- The customer may not be able to provide a detailed description or the location of the noise. Attempt to obtain all the facts and conditions that exist when the noise occurs (or does not occur).
- If there is more than one noise in the vehicle, be sure to diagnose and repair the noise that the customer is concerned about. This can be accomplished by test driving the vehicle with the customer.
- After identifying the type of noise, isolate the noise in terms of its characteristics. The noise characteristics are provided so the customer, service adviser and technician are all speaking the same language when defining the noise.
- Squeak —(Like tennis shoes on a clean floor)  
Squeak characteristics include the light contact/fast movement/brought on by road conditions/hard surfaces = higher pitch noise/softer surfaces = lower pitch noises/edge to surface = chirping.
- Creak—(Like walking on an old wooden floor)  
Creak characteristics include firm contact/slow movement/twisting with a rotational movement/pitch dependent on materials/often brought on by activity.
- Rattle—(Like shaking a baby rattle)  
Rattle characteristics include the fast repeated contact/vibration or similar movement/loose parts/missing clip or fastener/incorrect clearance.
- Knock —(Like a knock on a door)  
Knock characteristics include hollow sounding/sometimes repeating/often brought on by driver action.
- Tick—(Like a clock second hand)  
Tick characteristics include gentle contacting of light materials/loose components/can be caused by driver action or road conditions.
- Thump—(Heavy, muffled knock noise)  
Thump characteristics include softer knock/dead sound often brought on by activity.
- Buzz—(Like a bumble bee)  
Buzz characteristics include high frequency rattle/firm contact.
- Often the degree of acceptable noise level will vary depending upon the person. A noise that you may judge as acceptable may be very irritating to the customer.
- Weather conditions, especially humidity and temperature, may have a great effect on noise level.

### DUPLICATE THE NOISE AND TEST DRIVE

If possible, drive the vehicle with the customer until the noise is duplicated. Note any additional information on the Diagnostic Worksheet regarding the conditions or location of the noise. This information can be used to duplicate the same conditions when you confirm the repair.

# SQUEAK AND RATTLE TROUBLE DIAGNOSES

## < SYMPTOM DIAGNOSIS >

If the noise can be duplicated easily during the test drive, to help identify the source of the noise, try to duplicate the noise with the vehicle stopped by doing one or all of the following:

- 1) Close a door.
  - 2) Tap or push/pull around the area where the noise appears to be coming from.
  - 3) Rev the engine.
  - 4) Use a floor jack to recreate vehicle "twist".
  - 5) At idle, apply engine load (electrical load, half-clutch on M/T model, drive position on CVT and A/T models).
  - 6) Raise the vehicle on a hoist and hit a tire with a rubber hammer.
- Drive the vehicle and attempt to duplicate the conditions the customer states exist when the noise occurs.
  - If it is difficult to duplicate the noise, drive the vehicle slowly on an undulating or rough road to stress the vehicle body.

## CHECK RELATED SERVICE BULLETINS

After verifying the customer concern or symptom, check ASIST for Technical Service Bulletins (TSBs) related to that concern or symptom.

If a TSB relates to the symptom, follow the procedure to repair the noise.

## LOCATE THE NOISE AND IDENTIFY THE ROOT CAUSE

1. Narrow down the noise to a general area. To help pinpoint the source of the noise, use a listening tool (Chassis Ear: J-39570, Engine Ear: J-39565 and mechanic's stethoscope).
2. Narrow down the noise to a more specific area and identify the cause of the noise by:
  - removing the components in the area that you suspect the noise is coming from.  
Do not use too much force when removing clips and fasteners, otherwise clips and fasteners can be broken or lost during the repair, resulting in the creation of new noise.
  - tapping or pushing/pulling the component that you suspect is causing the noise.  
Do not tap or push/pull the component with excessive force, otherwise the noise will be eliminated only temporarily.
  - feeling for a vibration with your hand by touching the component(s) that you suspect is (are) causing the noise.
  - placing a piece of paper between components that you suspect are causing the noise.
  - looking for loose components and contact marks.Refer to [RF-37, "Generic Squeak and Rattle Troubleshooting"](#).

## REPAIR THE CAUSE

- If the cause is a loose component, tighten the component securely.
- If the cause is insufficient clearance between components:
  - separate components by repositioning or loosening and retightening the component, if possible.
  - insulate components with a suitable insulator such as urethane pads, foam blocks, felt cloth tape or urethane tape. A NISSAN Squeak and Rattle Kit (J-43980) is available through your authorized NISSAN Parts Department.

### CAUTION:

**Do not use excessive force as many components are constructed of plastic and may be damaged.**

**Always check with the Parts Department for the latest parts information.**

**The following materials are contained in the NISSAN Squeak and Rattle Kit (J-43980). Each item can be ordered separately as needed.**

#### URETHANE PADS [1.5 mm (0.059 in) thick]

Insulates connectors, harness, etc.

76268-9E005: 100×135 mm (3.94×5.31 in)/76884-71L01: 60×85 mm (2.36×3.35 in)/76884-71L02: 15×25 mm (0.59×0.98 in)

#### INSULATOR (Foam blocks)

Insulates components from contact. Can be used to fill space behind a panel.

73982-9E000: 45 mm (1.77 in) thick, 50×50 mm (1.97×1.97 in)/73982-50Y00: 10 mm (0.39 in) thick, 50×50 mm (1.97×1.97 in)

#### INSULATOR (Light foam block)

80845-71L00: 30 mm (1.18 in) thick, 30×50 mm (1.18×1.97 in)

#### FELT CLOTH TAPE

Used to insulate where movement does not occur. Ideal for instrument panel applications.

68370-4B000: 15×25 mm (0.59×0.98 in) pad/68239-13E00: 5 mm (0.20 in) wide tape roll. The following materials not found in the kit can also be used to repair squeaks and rattles.

#### UHMW (TEFLON) TAPE

Insulates where slight movement is present. Ideal for instrument panel applications.

#### SILICONE GREASE

# SQUEAK AND RATTLE TROUBLE DIAGNOSES

## < SYMPTOM DIAGNOSIS >

Used instead of UHMW tape that will be visible or not fit.

Note: Will only last a few months.

### SILICONE SPRAY

Use when grease cannot be applied.

### DUCT TAPE

Use to eliminate movement.

## CONFIRM THE REPAIR

Confirm that the cause of a noise is repaired by test driving the vehicle. Operate the vehicle under the same conditions as when the noise originally occurred. Refer to the notes on the Diagnostic Worksheet.

## Generic Squeak and Rattle Troubleshooting

INFOID:000000007988422

Refer to Table of Contents for specific component removal and installation information.

## INSTRUMENT PANEL

Most incidents are caused by contact and movement between:

1. The cluster lid A and instrument panel
2. Acrylic lens and combination meter housing
3. Instrument panel to front pillar garnish
4. Instrument panel to windshield
5. Instrument panel pins
6. Wiring harnesses behind the combination meter
7. A/C defroster duct and duct joint

These incidents can usually be located by tapping or moving the components to duplicate the noise or by pressing on the components while driving to stop the noise. Most of these incidents can be repaired by applying felt cloth tape or silicone spray (in hard to reach areas). Urethane pads can be used to insulate wiring harness.

### CAUTION:

**Do not use silicone spray to isolate a squeak or rattle. If you saturate the area with silicone, you will not be able to recheck the repair.**

## CENTER CONSOLE

Components to pay attention to include:

1. Shift selector assembly cover to finisher
2. A/C control unit and cluster lid C
3. Wiring harnesses behind audio and A/C control unit

The instrument panel repair and isolation procedures also apply to the center console.

## DOORS

Pay attention to the:

1. Finisher and inner panel making a slapping noise
2. Inside handle escutcheon to door finisher
3. Wiring harnesses tapping
4. Door striker out of alignment causing a popping noise on starts and stops

Tapping or moving the components or pressing on them while driving to duplicate the conditions can isolate many of these incidents. You can usually insulate the areas with felt cloth tape or insulator foam blocks from the NISSAN Squeak and Rattle Kit (J-43980) to repair the noise.

## TRUNK

Trunk noises are often caused by a loose jack or loose items put into the trunk by the owner.

In addition look for:

1. Trunk lid bumpers out of adjustment
2. Trunk lid striker out of adjustment
3. The trunk lid torsion bars knocking together
4. A loose license plate or bracket

# SQUEAK AND RATTLE TROUBLE DIAGNOSES

## < SYMPTOM DIAGNOSIS >

---

Most of these incidents can be repaired by adjusting, securing or insulating the item(s) or component(s) causing the noise.

### MOONROOF/HEADLINING

Noises in the moonroof/headlining area can often be traced to one of the following:

1. Moonroof lid, rail, linkage or seals making a rattle or light knocking noise
2. Sun visor shaft shaking in the holder
3. Front or rear windshield touching headliner and squeaking

Again, pressing on the components to stop the noise while duplicating the conditions can isolate most of these incidents. Repairs usually consist of insulating with felt cloth tape.

### OVERHEAD CONSOLE (FRONT AND REAR)

Overhead console noises are often caused by the console panel clips not being engaged correctly. Most of these incidents are repaired by pushing up on the console at the clip locations until the clips engage.

In addition look for:

1. Loose harness or harness connectors.
2. Front console map/reading lamp lens loose.
3. Loose screws at console attachment points.

### SEATS

When isolating seat noise it's important to note the position the seat is in and the load placed on the seat when the noise is present. These conditions should be duplicated when verifying and isolating the cause of the noise.

Cause of seat noise include:

1. Headrest rods and holder
2. A squeak between the seat pad cushion and frame
3. The rear seatback lock and bracket

These noises can be isolated by moving or pressing on the suspected components while duplicating the conditions under which the noise occurs. Most of these incidents can be repaired by repositioning the component or applying urethane tape to the contact area.

### UNDERHOOD

Some interior noise may be caused by components under the hood or on the engine wall. The noise is then transmitted into the passenger compartment.

Causes of transmitted underhood noise include:

1. Any component installed to the engine wall
2. Components that pass through the engine wall
3. Engine wall mounts and connectors
4. Loose radiator installation pins
5. Hood bumpers out of adjustment
6. Hood striker out of adjustment

These noises can be difficult to isolate since they cannot be reached from the interior of the vehicle. The best method is to secure, move or insulate one component at a time and test drive the vehicle. Also, engine RPM or load can be changed to isolate the noise. Repairs can usually be made by moving, adjusting, securing, or insulating the component causing the noise.

# SQUEAK AND RATTLE TROUBLE DIAGNOSES

< SYMPTOM DIAGNOSIS >

## Diagnostic Worksheet

INFOID:000000007988423

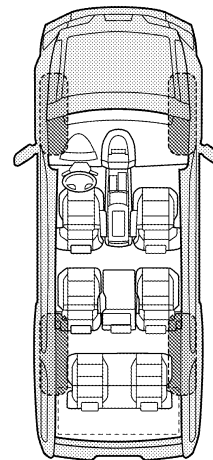
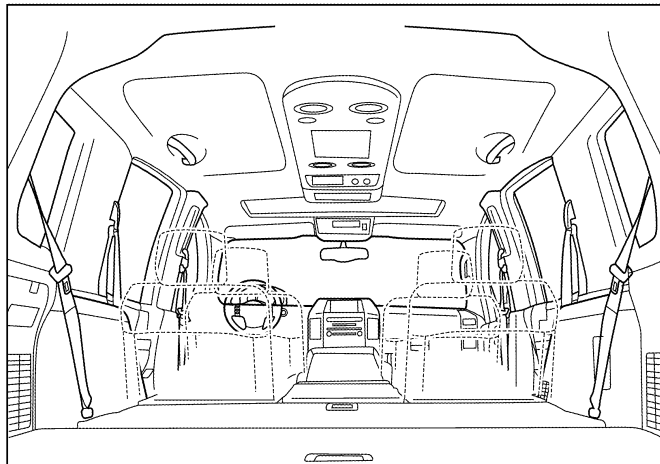
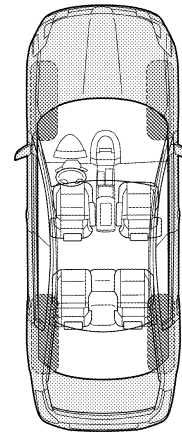
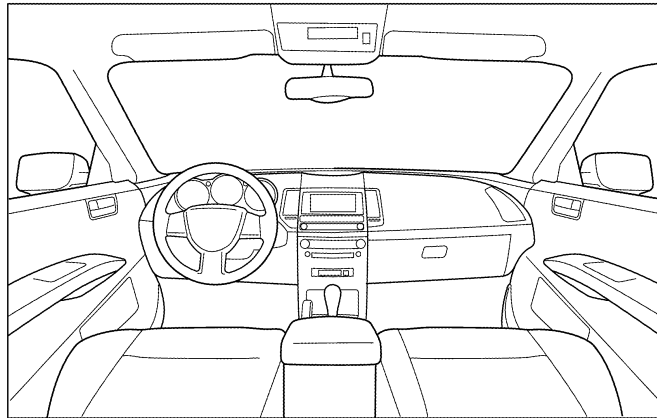
Dear Customer:

We are concerned about your satisfaction with your vehicle. Repairing a squeak or rattle sometimes can be very difficult. To help us fix your vehicle right the first time, please take a moment to note the area of the vehicle where the squeak or rattle occurs and under what conditions. You may be asked to take a test drive with a service advisor or technician to ensure we confirm the noise you are hearing.

### SQUEAK & RATTLE DIAGNOSTIC WORKSHEET

#### I. WHERE DOES THE NOISE COME FROM? (circle the area of the vehicle)

The illustrations are for reference only, and may not reflect the actual configuration of your vehicle.



Continue to page 2 of the worksheet and briefly describe the location of the noise or rattle. In addition, please indicate the conditions which are present when the noise occurs.

# SQUEAK AND RATTLE TROUBLE DIAGNOSES

< SYMPTOM DIAGNOSIS >

## SQUEAK & RATTLE DIAGNOSTIC WORKSHEET - page 2

Briefly describe the location where the noise occurs:

---

---

### II. WHEN DOES IT OCCUR? (please check the boxes that apply)

- |   |  |
|---|--|
| <input type="checkbox"/> Anytime                      | <input type="checkbox"/> After sitting out in the rain |
| <input type="checkbox"/> 1st time in the morning      | <input type="checkbox"/> When it is raining or wet     |
| <input type="checkbox"/> Only when it is cold outside | <input type="checkbox"/> Dry or dusty conditions       |
| <input type="checkbox"/> Only when it is hot outside  | <input type="checkbox"/> Other:                        |

### III. WHEN DRIVING:

- ☐ Through driveways
- ☐ Over rough roads
- ☐ Over speed bumps
- ☐ Only about \_\_\_\_ mph
- ☐ On acceleration
- ☐ Coming to a stop
- ☐ On turns: left, right or either (circle)
- ☐ With passengers or cargo
- ☐ Other: \_\_\_\_\_
- ☐ After driving \_\_\_\_ miles or \_\_\_\_ minutes

### IV. WHAT TYPE OF NOISE

- ☐ Squeak (like tennis shoes on a clean floor)
- ☐ Creak (like walking on an old wooden floor)
- ☐ Rattle (like shaking a baby rattle)
- ☐ Knock (like a knock at the door)
- ☐ Tick (like a clock second hand)
- ☐ Thump (heavy muffled knock noise)
- ☐ Buzz (like a bumble bee)

### TO BE COMPLETED BY DEALERSHIP PERSONNEL

#### Test Drive Notes:

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	YES	NO	Initials of person performing
Vehicle test driven with customer	<input type="checkbox"/>	<input type="checkbox"/>	_____
- Noise verified on test drive	<input type="checkbox"/>	<input type="checkbox"/>	_____
- Noise source located and repaired	<input type="checkbox"/>	<input type="checkbox"/>	_____
- Follow up test drive performed to confirm repair	<input type="checkbox"/>	<input type="checkbox"/>	_____

VIN: \_\_\_\_\_ Customer Name \_\_\_\_\_

W.O.# \_\_\_\_\_ Date: \_\_\_\_\_

This form must be attached to Work Order

LATA0071E



## GLASS LID

< REMOVAL AND INSTALLATION >

# REMOVAL AND INSTALLATION

## GLASS LID

### Removal and Installation

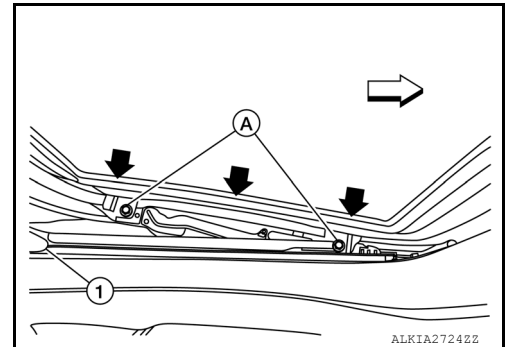
INFOID:000000008747307

#### REMOVAL

##### CAUTION:

- After installing glass lid, check gap/height adjustments and operation to make sure there is no malfunction.
- Handle glass lid with care to prevent damage.

1. Open sunshade (1), then close glass lid.  
⇐: Front
2. Remove glass lid bolts (A) on the LH and RH sides.
3. Remove glass lid from moonroof unit assembly.
- 4.



#### INSTALLATION

1. Position glass lid to moonroof unit assembly.
2. Tighten glass lid bolts.  
**NOTE:**  
First tighten left front bolt, then right rear bolt on moonroof lid assembly to prevent uneven torque while tightening remaining bolts.
3. After installation, check moonroof operation and glass lid alignment. Refer to [RF-43, "Inspection"](#).

RF

# MOONROOF MOTOR ASSEMBLY

< REMOVAL AND INSTALLATION >

## MOONROOF MOTOR ASSEMBLY

### Removal and Installation

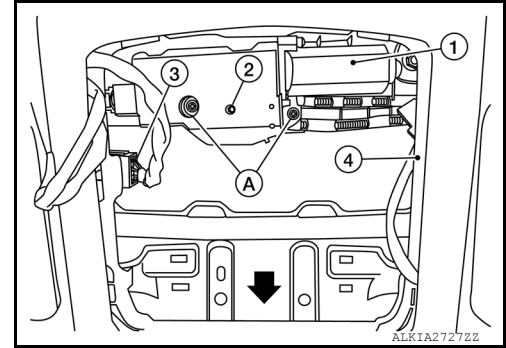
INFOID:000000008747308

#### REMOVAL

1. Close glass lid.
2. Remove the front room/map lamp assembly from headlining (4). Refer to [INL-63, "Removal and Installation"](#).  
⇐: Front
3. Remove moonroof motor assembly screws (A).
4. Disconnect harness connector (3) and remove moonroof motor assembly (1) from moonroof unit assembly front end rail.

#### CAUTION:

**Do not run the removed moonroof motor assembly as a single unit.**



#### INSTALLATION

1. Move moonroof motor assembly laterally little by little so that the gear is completely engaged into the wire on the moonroof unit assembly, and the mounting surfaces become parallel. Install the moonroof motor assembly screws and tighten.

#### CAUTION:

**Before installing the motor, be sure to place the link and wire assembly in the symmetrical and fully closed position.**

#### NOTE:

If necessary, insert a suitable tool into the drive key and rotate right or left slightly to assist in complete moonroof motor gear alignment.

2. Remainder of installation is in the reverse order of removal.
3. Synchronize moonroof motor assembly with moonroof unit assembly.

# MOONROOF UNIT ASSEMBLY

< REMOVAL AND INSTALLATION >

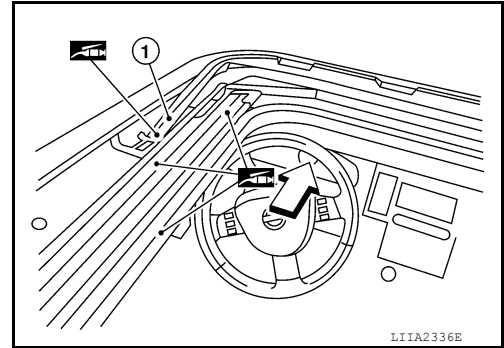
## MOONROOF UNIT ASSEMBLY

### Inspection

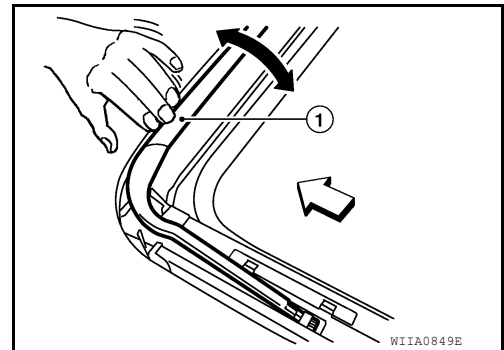
INFOID:000000007988428

#### WIND DEFLECTOR

1. Open glass lid fully.
2. Visually check for proper installation, damaged/deteriorated components, or foreign objects within mechanism. Correct as required for smooth operation.
3. Check for grease at the wind deflector arm (1) and pivot areas. If necessary, apply a sufficient amount of grease for non-binding operation.  
↩: Front



4. Check that the wind deflector (1) moves freely within the moonroof unit assembly while manually pressing down and releasing. If a malfunction is detected, remove the moonroof unit assembly and visually inspect. If damage is found, replace either wind deflector (1) or moonroof unit assembly as required. Refer to [RF-49, "Removal and Installation"](#) (WIND DEFLECTOR) or [RF-46, "Removal and Installation"](#) (MOONROOF UNIT ASSEMBLY).  
↩: Front



#### LINK AND WIRE ASSEMBLY

##### NOTE:

Before replacing a suspect part, make sure it is the source of noise being experienced.

1. Check link to determine if coating film has peeled off excessively enough that substrate is visible. Check also to determine if link is the source of noise. Replace as necessary.
2. Visually check to determine if a sufficient amount of grease has been applied to wire or rail groove. If not, add grease as required.
3. Check wire for any damage or deterioration. If any damage is found, replace moonroof unit assembly. Refer to [RF-46, "Removal and Installation"](#).

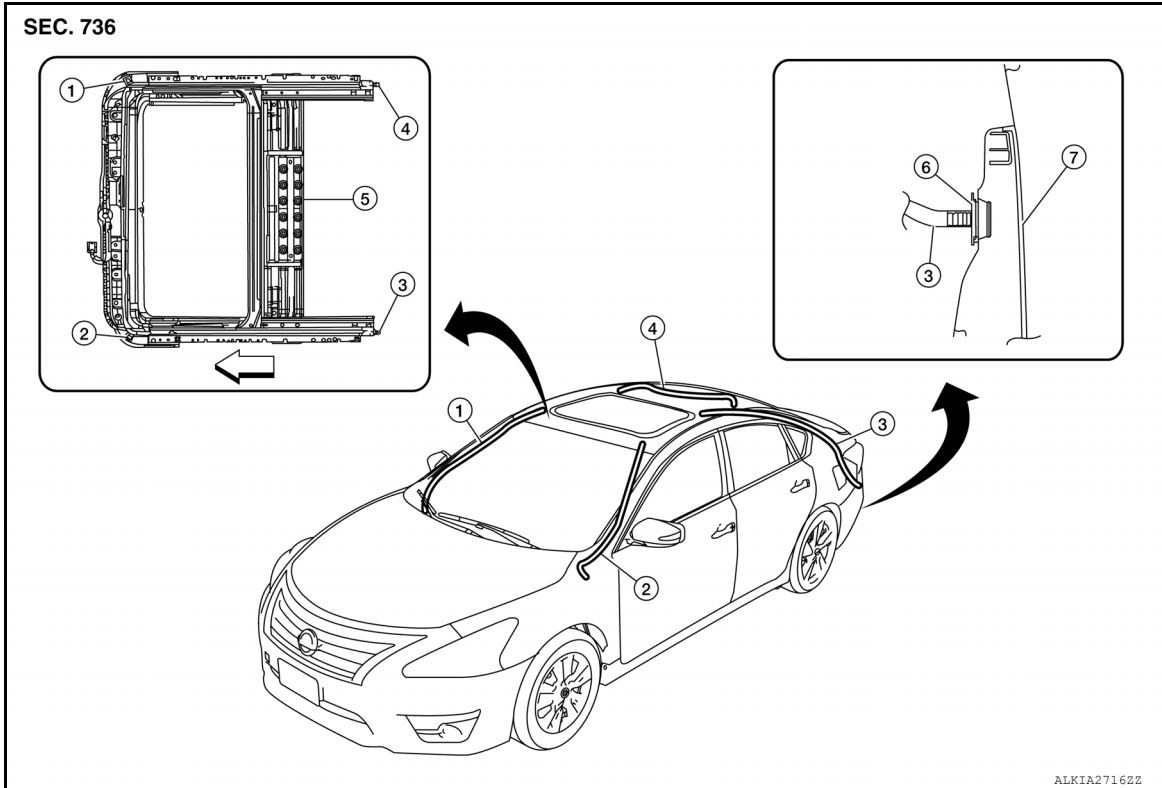
#### WEATHERSTRIP

1. Visually check weatherstrip for damage, deterioration, or deformation.
  - Open glass lid partially to inspect front edge of weatherstrip.
  - Tilt up glass lid fully to inspect sides and rear edge of weatherstrip.If any area of the weatherstrip is found to be damaged, replace the glass lid. Refer to [RF-41, "Removal and Installation"](#).
2. Check for leakage around glass lid.
  - Close moonroof lid assembly.
  - Pour water around surface to determine area of concern.
  - For gaps or misalignment, adjust glass lid to specifications. Refer to ADJUSTMENT in this section.
  - For damaged sealing surfaces, either replace glass lid, refer to [RF-41, "Removal and Installation"](#) or repair the panel, refer to [BRM-4, "High Strength Steel \(HSS\)"](#).

#### DRAIN HOSES

# MOONROOF UNIT ASSEMBLY

## < REMOVAL AND INSTALLATION >



1. Remove the headlining. Refer to [INT-30. "Removal and Installation"](#).
2. Visually check drain hoses for:
  - Proper connection at moonroof unit assembly and drain hose.
  - Damage, pinch, cracks or deterioration.
  - Proper fastening and routing on body panels.
3. Pour water through drain hoses to determine watertight performance.  
If damaged or leaking portions in any drain hose is found, replace entire drain hose as necessary.

### ADJUSTMENT

#### **CAUTION:**

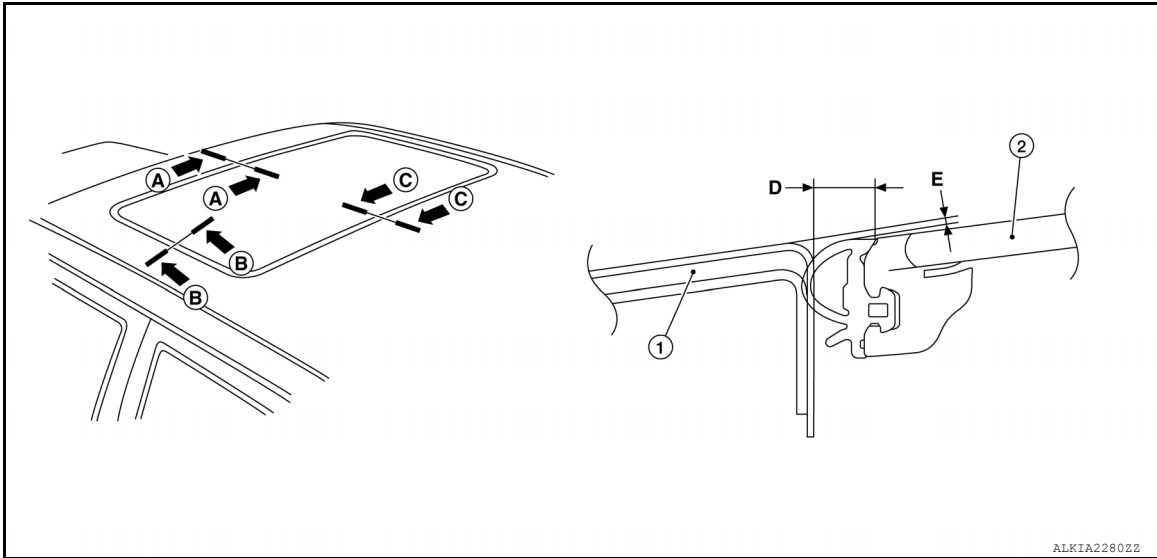
- Always work with a helper.
- Handle moonroof lid assembly with care to prevent damage.

#### **NOTE:**

- For easier and more accurate installation, always mark each point before removal.
- After any adjustment, check moonroof operation and moonroof lid assembly alignment.

# MOONROOF UNIT ASSEMBLY

## < REMOVAL AND INSTALLATION >



1. Roof panel

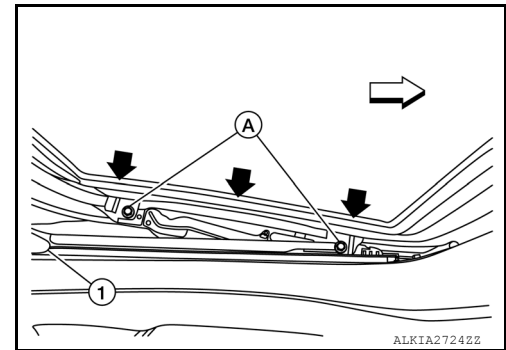
2. Glass lid

Unit: mm (in)

Portion	Gap (D)	Surface height difference (E)
(A – A)	$7.3 \pm 0.8$ (0.29 $\pm$ 0.03)	$0.7 \pm 1.5$ (–0.03 $\pm$ 0.06)
(B – B)	$7.3 \pm 0.8$ (0.29 $\pm$ 0.03)	$0.7 \pm 1.5$ (–0.03 $\pm$ 0.06)
(C – C)	$7.3 \pm 0.8$ (0.29 $\pm$ 0.03)	$0.7 \pm 1.5$ (–0.03 $\pm$ 0.06)

### Gap Adjustment (Front and Rear)

- Open sunshade (1).  
⇐: Front
- Tilt glass lid up.
- Loosen glass lid bolts (A) (two each on LH and RH sides), then tilt glass lid down (⇐).  
**NOTE:**  
LH side shown; RH side similar.
- Manually adjust glass lid from outside of vehicle until gaps A-A and C-C are within specification.  
**NOTE:**  
Temporarily loosely tighten glass lid bolts to prevent movement between each adjustment.
- Tilt glass lid up and down several times using moonroof switch to check that it operates smoothly.
- Tilt glass lid up and tighten bolts.  
**NOTE:**  
First tighten left front bolt, then right rear bolt on glass lid to prevent uneven torque while tightening remaining bolts.



### Gap Adjustment (Sides)

The moonroof unit assembly is mounted on locator pins and adjustment from side to side cannot be performed.

### Surface Height Adjustment

- Tilt glass lid up and down several times using moonroof switch to check that it operates smoothly.
- Check height difference between roof surface and glass lid surface, then compare to specifications.
- If necessary, adjust height difference by using the following procedure.
  - Loosen glass lid bolts.
  - Manually raise/lower moonroof lid assembly until height difference is within specification.
  - Tilt glass lid up and down several times using moonroof switch to check that it operates smoothly.

# MOONROOF UNIT ASSEMBLY

## < REMOVAL AND INSTALLATION >

d. Tighten glass lid bolts.

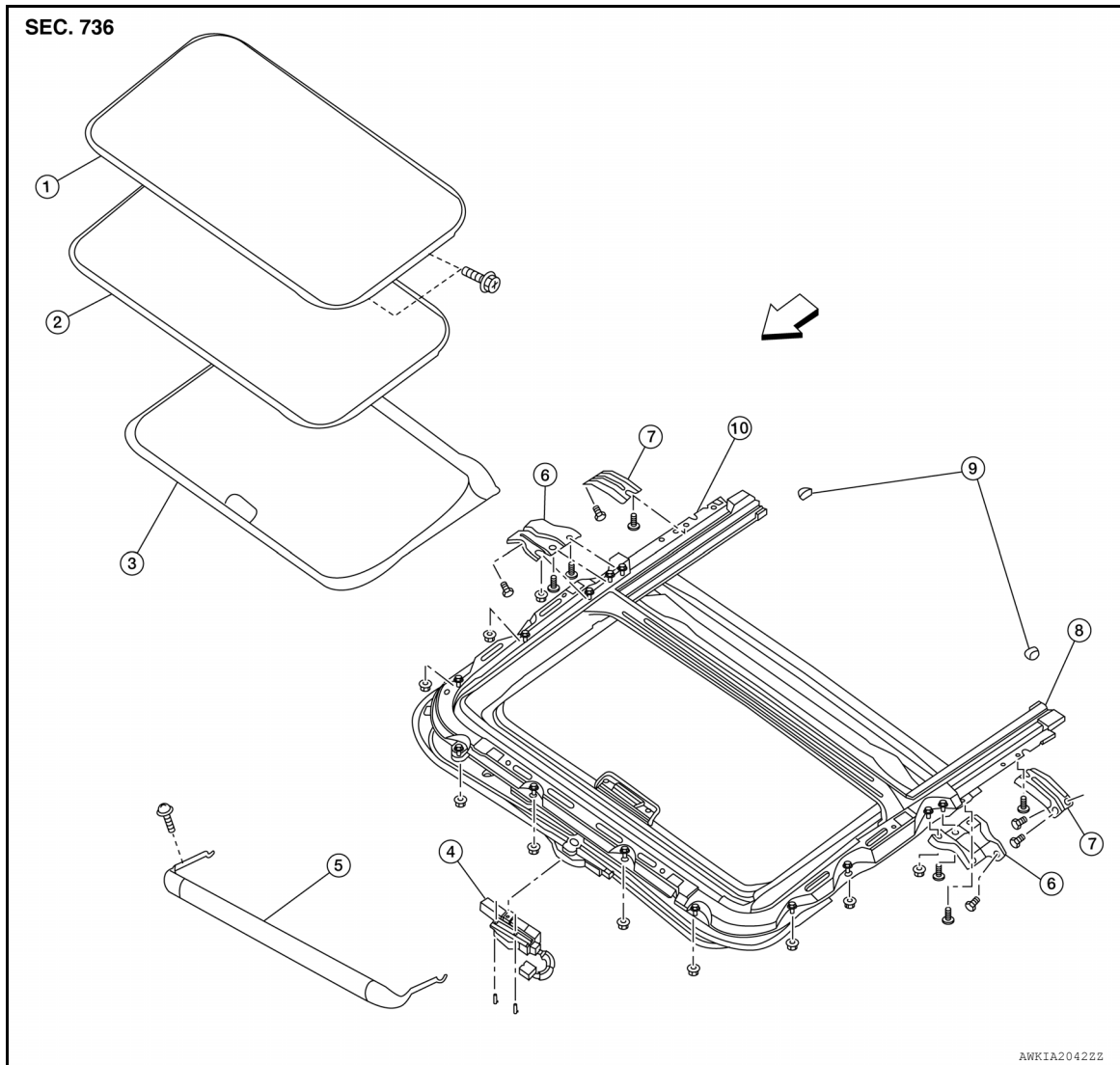
**NOTE:**

First tighten left front bolt, then right rear bolt on glass lid to prevent uneven torque while tightening remaining bolts.

e. After any adjustment, check moonroof operation and glass lid alignment.

### Exploded View

INFOID:000000007988429



- |                               |                         |                                |
|-------------------------------|-------------------------|--------------------------------|
| 1. Glass lid                  | 2. Weatherstrip         | 3. Sunshade                    |
| 4. Moonroof motor assembly    | 5. Wind deflector       | 6. Moonroof side bracket front |
| 7. Moonroof side bracket rear | 8. Drain hose connector | 9. Sunshade stoppers           |
| 10. Moonroof unit assembly    | ↔ Front                 |                                |

### Removal and Installation

INFOID:000000007988430

**CAUTION:**

- After installing either moonroof unit assembly or glass lid, check gap/height adjustments and operation to make sure there is no malfunction.
- Always work with a helper.
- Handle glass lid with care to prevent damage.
- When taking moonroof unit assembly out, use shop cloths to protect the headlining, seats and trim from damage.

**NOTE:**

# MOONROOF UNIT ASSEMBLY

## < REMOVAL AND INSTALLATION >

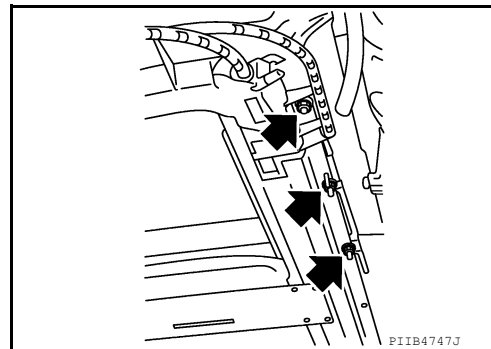
For easier and more accurate installation, always mark each point before removal.

### REMOVAL

#### CAUTION:

**Before servicing moonroof unit assembly, turn the ignition switch off, disconnect both battery terminals and wait at least three minutes.**

1. Close glass lid.
2. Disconnect both the negative and positive battery terminals, then wait at least three minutes. Refer to [PG-72, "Removal and Installation \(Battery\)"](#).
3. Remove the headlining. Refer to [INT-30, "Removal and Installation"](#).
4. Disconnect drain hoses.
5. Disconnect the harness connector from the moonroof motor assembly.
6. Remove nuts on the front end and side rails of the moonroof unit assembly.
7. Remove moonroof side bracket front bolts.
8. Remove moonroof side bracket rear bolts and remove moonroof unit assembly from roof panel.
9. Remove moonroof unit assembly from the passenger compartment while being careful not to damage the headlining, seats and trim.



### INSTALLATION

1. Loosely tighten the moonroof side bracket rear bolts to the moonroof unit assembly side rails.
2. Install moonroof unit into passenger compartment and loosely tighten moonroof side bracket rear bolts to roof panel while supporting front.
3. Align the moonroof unit assembly front end rail and side rails with the locator pins, then loosely tighten the bolts.
4. Install remaining moonroof side brackets and loosely tighten bolts.
5. Tighten the moonroof unit assembly front end and side rail bolts diagonally to the specified torque.
6. Tighten the moonroof side bracket front bolts at the vehicle side first, then at the side rail.
7. Tighten the moonroof side bracket rear bolts at the vehicle side first, then at the side rail.
8. Connect harness connector to the moonroof motor assembly.
9. Connect drain hoses.
10. Install the headlining. Refer to [INT-30, "Removal and Installation"](#).

# SUNSHADE

## < REMOVAL AND INSTALLATION >

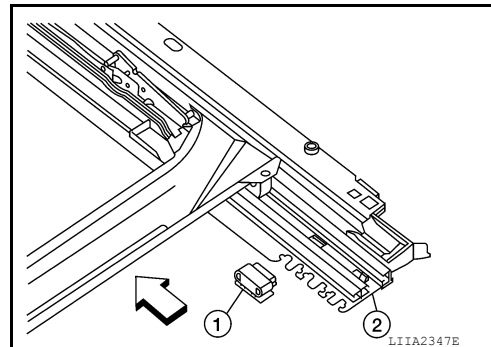
### SUNSHADE

#### Removal and Installation

INFOID:000000008747309

#### REMOVAL

1. Remove moonroof unit assembly. Refer to [RF-46, "Removal and Installation"](#).
2. Remove the sunshade stoppers (1) (LH/RH) from the moonroof unit assembly side rails (2).  
⇐: Front
3. Remove sunshade from rear end of moonroof unit assembly.



#### INSTALLATION

Installation is in the reverse order of removal.



# WIND DEFLECTOR

< REMOVAL AND INSTALLATION >

## WIND DEFLECTOR

### Removal and Installation

INFOID:000000008747310

#### REMOVAL

1. Open the glass lid.
2. Remove the wind deflector.
  - a. Remove the wind deflector screws (one from each side).
  - b. Remove the wind deflector from the moonroof unit assembly.

#### INSTALLATION

Installation is in the reverse order of removal.

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

RF

# MOONROOF SWITCH

< REMOVAL AND INSTALLATION >

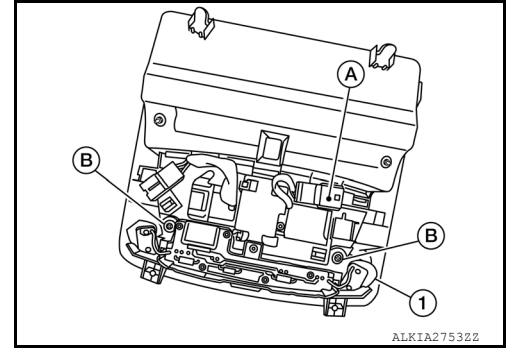
## MOONROOF SWITCH

### Removal and Installation

INFOID:000000008747311

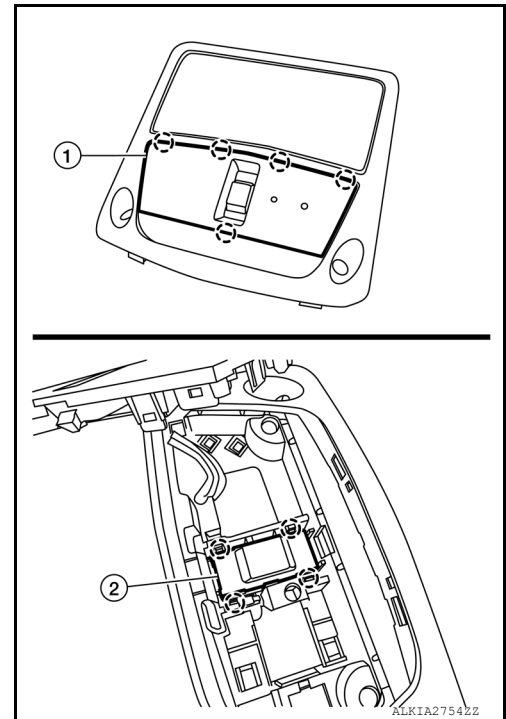
#### REMOVAL

1. Remove front room/map lamp assembly. Refer to [INL-63. "Removal and Installation"](#).
2. Disconnect the harness connector (A) from front the room/map lamp assembly.
3. Remove the screws (B) from front room/map lamp assembly, using a suitable tool and remove map lamp bar (1).



4. Release the pawls and remove the moonroof switch finisher (1).
5. Release the pawls and remove the moonroof switch (2) from the front room/map lamp assembly.

(○): Pawl



#### INSTALLATION

Installation is in the reverse order of removal.

# MOONROOF UNIT ASSEMBLY

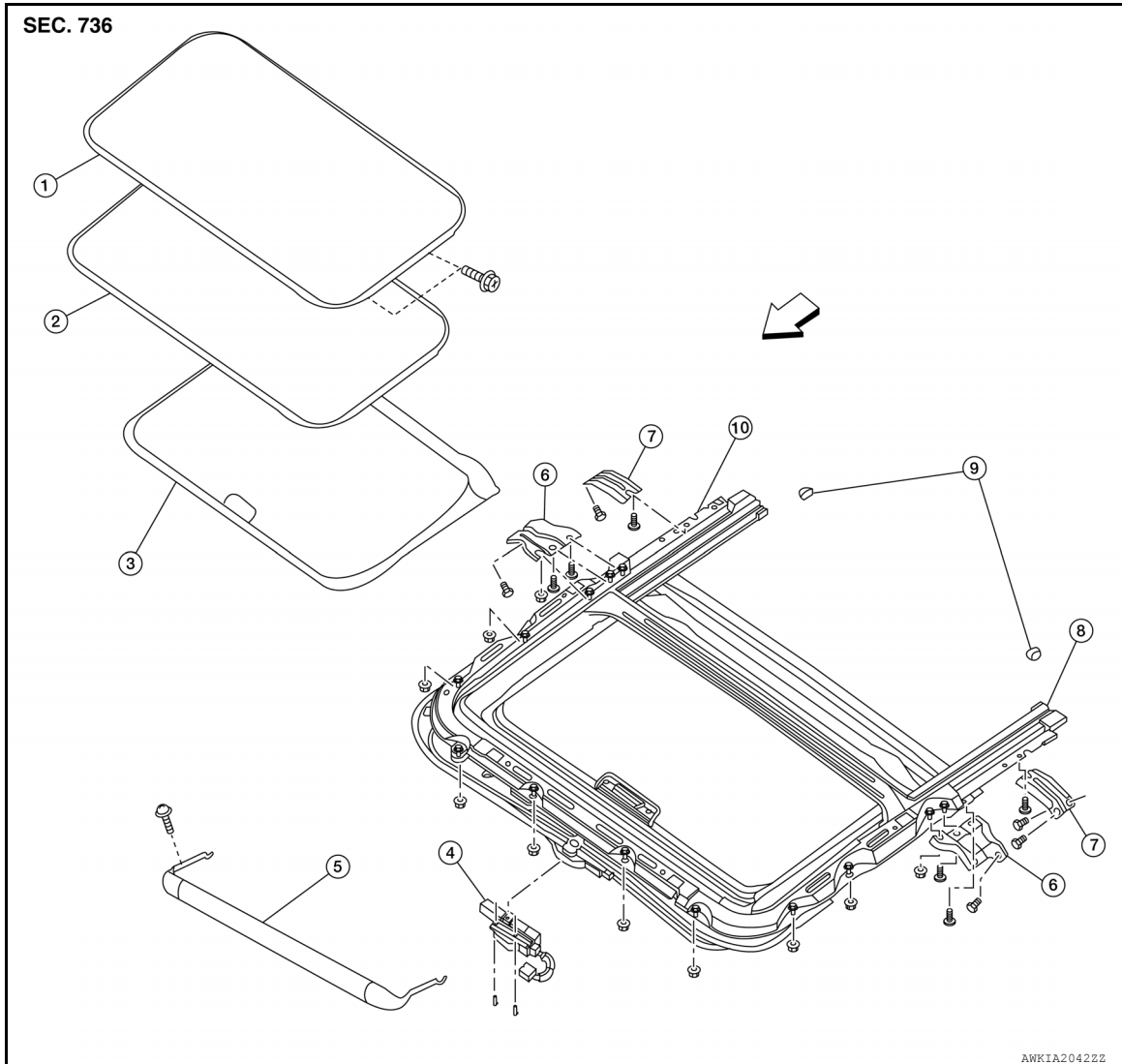
< UNIT DISASSEMBLY AND ASSEMBLY >

## UNIT DISASSEMBLY AND ASSEMBLY

### MOONROOF UNIT ASSEMBLY

Exploded View

INFOID:000000007988431



- |                               |                         |                                |
|-------------------------------|-------------------------|--------------------------------|
| 1. Glass lid                  | 2. Weatherstrip         | 3. Sunshade                    |
| 4. Moonroof motor assembly    | 5. Wind deflector       | 6. Moonroof side bracket front |
| 7. Moonroof side bracket rear | 8. Drain hose connector | 9. Sunshade stoppers           |
| 10. Moonroof unit assembly    | ← Front                 |                                |

### Disassembly and Assembly

INFOID:000000007988432

#### DISASSEMBLY

1. Remove the moonroof unit assembly. Refer to [RF-46, "Removal and Installation"](#).
2. Remove the sunshade stoppers (LH/RH) from the moonroof unit assembly side rails.
3. Remove sunshade from the rear end of moonroof unit assembly.
4. Remove glass lid bolts on each side.
5. Remove glass lid from moonroof unit assembly.
6. Remove the wind deflector screws (one from each side).

## **MOONROOF UNIT ASSEMBLY**

### **< UNIT DISASSEMBLY AND ASSEMBLY >**

---

7. Remove the wind deflector from the moonroof unit assembly.
8. Remove moonroof motor assembly screws.
9. Remove moonroof motor assembly from moonroof unit assembly front end rail.

### **ASSEMBLY**

Assemble in the reverse order of disassembly.